Research Product 83-5

# THE DEVELOPMENT OF CREW DRILLS FOR ARMOR WEAPON SYSTEMS

ARI FIELD UNIT AT FORT KNOX, KENTUCKY

January 1983



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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This report describes the methodology used to design and develop crew drills for armor weapon systems. In the design of the crew drills training approach emphasis was placed on incorporating the concept of dry-fire training in a low cost environment. Also included were concepts for program management, task performance and evaluation, and quality control. Applying these concepts, a set of tank gunnery crew drills was developed for the M1 General Abrams, M60A3, and M60A1 (AOS) tanks. Specific task requirements were detailed for each weapon system by

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crew position and phases of target engagement. Task behaviors considered critical to crew performance were identified for evaluation. The set of crew drills for each armor system is presented in Appendixes A, B, and C.

Research Product 83-5

# THE DEVELOPMENT OF CREW DRILLS FOR ARMOR WEAPON SYSTEMS

Ronald E. Kraemer

Submitted by:
Donald E. Haggard, Chief
ARI FIELD UNIT AT FORT KNOX, KENTUCKY

Approved by:
Harold F. O'Neil, Jr., Director
TRAINING RESEARCH LABORATORY

**U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES**
**5001 Eisenhower Avenue, Alexandria, Virginia 22333**

**Office, Deputy Chief of Staff for Personnel**
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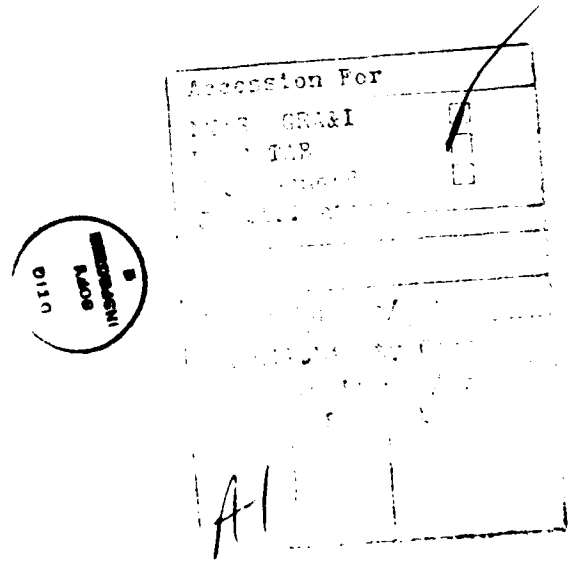
## FOREWORD

The Fort Knox Field Unit of the Army Research Institute for the Behavioral and Social Sciences (ARI) carries out research and exploratory development in the area of armor training. An objective of this work is to develop, through analytic and field research, tank crew, and individual training methods that are effective and efficient.

This report describes the methodology used to design and develop crew drills for armor weapon systems. It describes the steps taken to develop a training approach that incorporates the concept of dry-fire training in a low-cost environment. It also describes the steps taken to develop a tank gunnery crew drills training document for the M1 General Abrams, M60A3, and M60A1(AOS) tanks.

The research was done under ARI FY 81 Work Program, Army Project 2Q263743A794, Armor Training in Combat Units.

EDGAR M. JOHNSON
Technical Director



THE DEVELOPMENT OF CREW DRILLS FOR ARMOR WEAPON SYSTEMS

## EXECUTIVE SUMMARY


### Requirement:

To maximize the combat potential of Armor weapon systems through research on the design and development of new training concepts and prototype training programs for gunnery and maintenance tasks in armor systems.

### Procedure:

The primary objective of the research was to design a crew drills training approach for armor weapon systems that would incorporate the concept of dry-fire training in a low cost environment. A secondary objective was to develop a set of tank gunnery crew drills for the M1 General Abrams, M60A3, and M60A1(AOS) armor weapon systems to demonstrate the feasibility of the training approach.

Armor training literature was obtained and reviewed to identify the current approach to crew drills training. A dry-fire crew drills training concept was then developed to include guidelines for program management, task performance and evaluation, and quality control.

A set of prototype crew drills for three armor weapon systems were subsequently developed following this design blueprint. Tank gunnery requirements considered representative of the domain were selected and analyzed to identify individual task performance by crew position and phase of target engagement. Individual task performance rated critical to crew drills performance were then specified for evaluation.

### Findings:

A crew drills training approach was designed and developed for dry-fire training tank gunnery requirements in a low cost environment. This approach adheres to the training management guidelines and performance oriented approach adopted by the Army, but does so from a prescriptive rather than descriptive viewpoint.

Separate sets of prototype tank gunnery crew drills were developed for three armor weapon systems to demonstrate the feasibility of the training design. These companion documents are presented in Appendix A, Crew Drills for M1 General Abrams Tank Gunnery; Appendix B, Crew Drills for M60A3 Tank Gunnery; and Appendix C, Crew Drills for M60A1(AOS) Tank Gunnery.

Utilization of Findings:

The crew drills training approach developed by ARI has been adopted by the Directorate of Training Developments (DTD), U.S. Army Armor School (USAARMS), for training both tank and track vehicle commander collective tasks. The separate sets of gunnery crew drills developed for the M1 Abrams, M60A3, and the M60A1(AOS) have been modified slightly to meet TRADOC requirements, and are contained in FM 17-13-1 (Tank Commander's Guide for the M1 Abrams), FM 17-13-2 (Tank Commander's Guide for the M48/M60 series Tank), and FM 17-13-3 (Tank Commander's Guide for the M60A3 Tank).

THE DEVELOPMENT OF CREW DRILLS FOR ARMOR WEAPON SYSTEMS

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# INTRODUCTION

## BACKGROUND

In a joint review of the M1 Transition Training that was conducted during Operational Testing (OT-II) at Fort Bliss, Texas, Directorate of Training Developments (DTD) personnel, US Army Armor School, and ARI attempted to identify critical issues pertinent to effective training delivery for the M1 General Abrams tank. At this time a training paradigm was conceptualized to represent the current training structure for Armor. As shown in Figure 1, this paradigm contains six hierarchical levels of training and eight subsequent interface problem areas. Transition from one level of training to another is dependent on the successful completion of each subordinate level. For illustrative purposes, performance gates (labelled 1-8) are depicted at each interface.

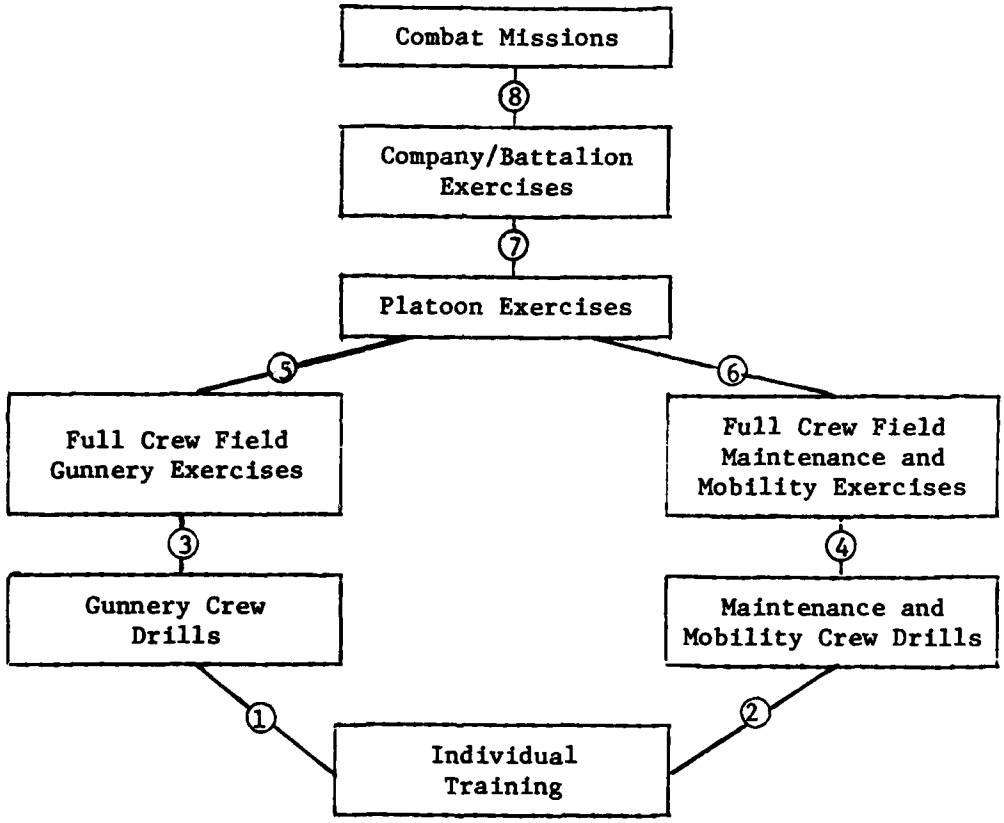


Figure 1. Armor Training structure

From an analysis of this training structure an immediate need for interfacing M1 individual skills training and tank gunnery crew drills (Gate 1) was identified. Generally, it was agreed that even though individual tank crew members might be capable of performing their job tasks proficiently, one or more may be quite incapable of functioning effectively as part of a tank crew. What crew skills needed to be trained, and how they are best trained and

integrated into an Armor training structure remained to be specified. In essence, insufficient attention has been given to team building exercises where crew members could weld their individual skills to a collective effort that is both effective and efficient.

To respond to this problem, the Weapons System Training Team within the Fort Knox Field Unit of the US Army Research Institute for the Behavioral and Social Sciences (ARI) initiated a program of research to design and develop crew drills for Armor that would incorporate a dry-fire training concept and enable tank crews to exercise their tank gunnery skills in a low cost environment. This research was included as part of an ongoing research effort concerned with developing, through analytic and field research, tank crew and individual training methods that are effective and efficient.

## PURPOSE OF RESEARCH

This report describes a research attempt to bridge the gap between individual and tank gunnery crew drills training by the design and development of crew drills for armor weapon systems training. Impetus for the research effort has come from DTD, USAARMS, and is based on DTD's continuing efforts to provide quality crew drills training programs for sustainment of collective skills. If proven effective, the proposed crew drills would provide a model for conducting collective training in Armor units. It would insure that each crewmember has the individual and collective skills required to function as part of a tank crew. It also would provide training managers with the diagnostic tools necessary to identify both individual and crew deficiencies.

# PROCEDURE

## OBJECTIVE

The primary objective of the research was to design crew drills for armor weapon systems that would incorporate the concept of dry-fire training in a low-cost environment. A secondary objective was to develop a set of prototype crew drills for M1, M60A3 and M60A1(AOS) armor weapon systems to demonstrate the feasibility of the crew drills approach.

## METHOD

To accomplish the research objectives, separate but sequential research and development efforts were undertaken. First, a five-step approach was conceptualized for designing crew drills. The first step obtained and reviewed was armor training literature directly related to tank crew drills training. After examining the documents to determine the existing training doctrine, a dry-fire crew drills training approach was formulated. To complement the approach, guidelines for program management, task performance and evaluation, and quality control measures were addressed. Also included in this effort was the development of a training conditions matrix and a training record that would promote the development of crew drill proficiency at increasing levels of task difficulty. The specific details involved in carrying out each of these steps are described in Part I.

Prototype tank gunnery crew drills for the M1, M60A3, and M60A1(AOS) tanks were developed to accomplish the second objective. For each separate system, armor literature relevant to the operation of each tank was obtained and reviewed along with available crew drills training documentation. Information gathered from these materials were then used to determine the subset of tank gunnery crew drills necessary and sufficient to represent each domain. Subsequently, individual task performances were identified by crew position and target engagement phases for each crew drill and content-validated using subject matter experts (SMEs). By analyzing task performance across crew positions, individual tasks considered critical to each gunnery performance were identified for the purposes of crew drills evaluation. The particulars involved in carrying out each of these steps are more fully described in Part II.

## PART I: DEVELOPMENT OF A CREW DRILLS TRAINING APPROACH

### LITERATURE REVIEW

To become familiar with the current training approach recommended for crew drills training, Training Circulars for the M48A5, M60, M60A1, and M60A1(AOS) tanks (TC 17-15-11), M60A2 (TC 17-15-12), M60A3 (TC 17-15-13), and M1 tank (TC 17-15-14 DRAFT) were obtained and reviewed. Aside from the technical differences due to weapon capabilities of each system, the training circulars were found quite similar in design. Part One listed the task, to include conditions and standards, and training references. Part Two identified training and evaluation guidelines. Part Three detailed the performance steps the crew would follow in carrying out the task. The crew drills training approach recommended for each weapon system was identical. Crew level training was to be conducted by the tank commanders, with the platoon leader or sergeant serving as supervisors/evaluator. Crew drills training was to be conducted like all other unit training, and accomplished collectively by having each crewman perform his individual tasks simultaneously with the others to accomplish the intended team effort.

The results of this literature review can be summarized in three statements. First, the training management functions necessary to conduct an efficient crew drills training program were undefined. Platoon leaders and sergeants were tasked to function as supervisors and evaluators based solely on their previous related experience. The assumption being made is that the experience and knowledge platoon leaders and sergeants have gained in conducting previous unit training qualifies them to function effectively as training managers. What we know about the current level of crew turbulence in armor units (Eaton & Neff, 1978) indicates that this is not the case. In fact, effective management techniques need to be developed for the collective training subsystem to significantly minimize the training time normally lost while tank crews attempt to "get their act together."

In addition to a lack of training management guidelines, formal guidance on how to conduct crew drills training was descriptive. That is, it told you what to do but not how to do it. Tank commanders were instructed to train individual tasks using performance-oriented concepts and to train collectively

by allowing each crewman to perform his tasks simultaneously with the others. Again, it's assumed that platoon leaders and tank commanders are qualified by their position to perform each of the individual training tasks. Most Armor units are affected by personnel turbulence to varying degrees. As such, some soldiers are assigned as tank commanders with little or no previous training. Others are assigned as tank commanders even though their primary MOS is not Armor. Still others are transferred to a new or different tank weapon system in which they are at best, only minimally qualified. To combat this problem, even for those few tank commanders who have the relevant experience and training, a prescriptive method of conducting crew drills training needs to be developed.

A final result of the literature review was the restrictive approach to evaluating individual and crew performance. Platoon leaders and sergeants were directed to measure achievement by observing both the product (time, target hit/miss) and process (performance steps) of crew performance. Unfortunately, the product and process measures are applicable only for evaluating "live fire" performance. As noted in the current tables of allowance, main gun ammunition for live-fire performance is not allocated for crew drills training. Crew drills training has to be accomplished with ammunition from gunnery qualification, Army Training and Evaluation Program (ARTEP) live-fire exercises, or through the use of subcaliber devices. For all practical purposes, most gunnery crew drills are trained and evaluated on the basis of "dry-fire" or "subcaliber fire," neither of which are addressed in the current crew drills training circulars. In summary, the evaluation criteria are inadequate for conducting crew drills training. Both dry-fire and subcaliber firing conditions and standards, training and evaluation guidelines, and performance steps need to be developed for each existing crew drill exercise.

## TRAINING APPROACH

The performance oriented training approach adopted by the US Army in recent years remains the training approach recommended in the proposed crew drills. Soldiers are trained based on precisely stated performance objectives that clearly specify what they must be capable of doing in their assigned or anticipated job. Lectures, discussions, and conferences are held to a minimum while the majority of training is focused on the conduct of practical exercises. Such a "hands-on" approach to training is considered mandatory if those being trained are to become experienced at performing their assigned tasks under the conditions and standards expected on the job.

In the current crew drills literature, the implementation of a performance oriented training approach resides in the hands of local commanders as training managers. Their experience plus training know-how determines whether crew drills training eventually succeeds or fails. In some situations these factors are sufficient. However, without training guidance, such training can become instructor dependent. In other words, how well an individual performs is dependent on who trained.

The proposed training approach attempts to provide personnel involved in crew drills training with the guidance and materials necessary for effective

and efficient training delivery. At the onset, tank crews, as well as individual crewmembers, are expected to meet their individual knowledge and skill requirements before participating in gunnery crew drills training. This requirement serves dual purposes. First, it eliminates the misuse of limited training time and resources by providing only the type of training that should be taking place. Second, since crewmember(s) do not have to sit around while other(s) are being trained to perform prerequisite tasks, it maintains the motivation to learn.

As mentioned later in this report, the key to the success of the proposed crew drills approach depends on whether the platoon leader carries out his assigned training responsibilities. In the proposed crew drills approach the platoon leader must be capable of performing each individual task called for in a given crew performance. Once these capabilities are acquired, he must then insure that each of his tank commanders know how to perform these tasks by conducting crew drill training. This "train the trainer" approach to crew drills is unique in that each tank commander is rotated through each of the four crew positions during a crew drill. This insures that each tank commander "knows what he's talking about" before he begins to train his own tank crew. It also prepares tank commanders to follow the recommended training approach by having them experience it first hand. As an added benefit, any technical or training-related problems encountered during the "train the trainer" session are resolved by the platoon training team as a whole, rather than by individual tank commanders during the conduct of crew training.

During this preliminary training session, the platoon leader provides detailed guidance for preparation of training at the tank crew level. After describing how to set up a target condition for a crew drill performance, the crew of tank commanders are instructed to enter the tank and establish the conditions specified for both the firing vehicle and their assigned crew stations. Safety regulations for tank operation are subsequently reviewed and the crew is given the green light to conduct training.

Acting as the tank commander, the platoon leader reminds the other tank commanders to follow the crew drills training approach being rehearsed in this training session. He then informs the crew of the training activity and the standard of performance specified for the crew drill. How the training is to take place, how long, and how they will be evaluated at the end of training are also explained.

During the actual presentation of training, the platoon leader "walks" each crewmember (tank commander) through his tasks as detailed by the crew drill procedures. He critiques each task activity as it is performed, and then provides whatever instruction is necessary to improve the quality of that performance. Crewmembers not directly participating in training at any given time are instructed to review their individual task requirements.

In summary, the training approach presented in the proposed crew drills is performance oriented and structured to provide the type of training essential for effective and efficient performance. It is performance oriented in that soldiers are trained to perform their tasks "hands-on" to the conditions

and standards specified for the job. It is structured in that, (a) personnel responsible for training delivery are required to demonstrate their ability to perform the tasks for which they will be conducting training, (b) detailed guidance is provided for setting up the conditions for training, introducing the training to the tank crewmembers, and for conducting the training, and (c) performance diagrams detailing the task procedures performed by each crewmember are provided to carry out each of the crew drills.

## GUIDELINES FOR PROGRAM MANAGEMENT

Program management techniques are major influences on the efficiency of training. This fact has been recognized by the Army and has been addressed in "Training Management: An Overview," (TC 21-5-1), a Training Management Digest publication which has been incorporated into a revised edition of "Military Training Management" (FM 21-5). This Army FM provides commanders/training managers and their staffs with an overview of a ten-step model for developing an effective training program.

The proposed crew drills approach is in keeping with this policy of training management, but is prescriptive rather than descriptive. That is, it attempts to more fully define the duties and responsibilities of each member of the training staff in carrying out his individual and collective efforts. At the highest level of command, the battalion commander retains the final authority and responsibility for the overall training subsystem. He continues to provide the mission type training guidance to accomplish the broader command missions, allocates training resources, and monitors and evaluates the effectiveness and efficiency of the training subsystem. However, the primary focus of the crew drills training effort begins at the tank crew level with each higher level of command assuming greater overall responsibility for the training. Guidelines for establishing individual responsibilities in the proposed crew drills are described below.

Tank Crewmembers. Each crewmember is given the primary responsibility for acquiring the knowledges and skills necessary to perform his individual job. They must obtain whatever self-instruction is needed to develop and maintain their individual skills proficiency so that intended team efforts can be achieved.

Tank Commander. Tank commanders are given the primary responsibility for implementing tank gunnery crew drills within their own tank crews. They must instruct each crewmember in his individual procedures, and then train them as a team to perform the crew task requirements. Whatever remedial training is necessary to ensure training success must be provided.

Platoon Sergeant. Platoon sergeants are given the major responsibility for carrying out all administrative and technical matters relating to crew drills implementation. In particular, they must ensure that individual tank crews are trained and evaluated as scheduled, and that the equipment, materials, and facilities necessary to implement both are available when needed. As senior tank commanders, they must provide their platoon leader with the knowledges and skills needed for effective operation and maintenance of the armor weapon system.

Platoon Leader. Platoon leaders are given direct responsibility, as training managers, to conduct, evaluate, and manage the overall training subsystem. Their most important function, and the key to the success of the proposed crew drills, is to train their individual tank commanders in how to prepare and conduct crew drills training. They must ensure that each tank commander is capable of performing both their individual and crew tasks and can implement the recommended training approach.

Company Commander. The company commander is given command responsibility for the total training and evaluation effort within the framework of the unit's assigned mission requirements. In particular, he must determine the unit's current level of individual and crew tank gunnery proficiency to include scheduling the required pre- and post-testing and obtaining the necessary evaluation resources. He also must quality control the total training effort by evaluating training success and adjusting training as necessary to meet both individual and unit readiness standards.

## GUIDELINES FOR PERFORMANCE EVALUATION

The evaluation guidelines specified in the Army's present approach to crew drills training states that "each crew member must perform all actions as outlined in the recommended performance steps within the specified time." The "specified time" being referred to is presented in the performance standards prepared for each crew drill. For each tank gunnery requirement, the performance standard specifies that the tank crew must, (a) open fire within so many seconds after a target appears, and (b) obtain a hit within the total number of seconds specified for the engagement. If a tank crew fails to meet the performance standards, the test evaluator(s) is to, (a) explain the weak areas to the crewmember(s), (b) have the crewmember(s) practice at their own pace, and (c) have the crewmember(s) repeat the drill when they are ready.

Unlike these guidelines for evaluation, the proposed crew drills recommends both a formal and informal approach. The formal approach recommends the use of the Tank Crew Gunnery Skills Test (TCGST) to diagnostically assess individual gunnery performance. The TCGST should be administered to every crewmember who newly joins a tank crew to ensure that each has the prerequisite knowledges and skills to perform his individual job tasks proficiently. The crew drill diagnostic tests should be administered annually to determine each tank crew's overall gunnery proficiency.

The informal evaluation approach focuses on the certification of crew drill performance by the platoon leader and platoon sergeant. Detailed guidelines for certification are the same as those for training and are identified separately for each crew drill. In setting up the certification or appraisal, the platoon leader and platoon sergeant should: (a) obtain the support specified for training, (b) establish the conditions identified for training, and (c) take up designated positions on the tank where they can best observe the crew's performance. To conduct the appraisal they should use the same detailed procedures guide developed for training, paying particular attention during the crew performance to the task behaviors rated critical (marked with a ☐ on the crew drill Procedures Guide). At least three performance trials are recommended

in appraising a tank crew's performance of a crew drill followed by a critique. An appraisal is considered successful when, (a) all of the actions specified on the performance checklist are performed correctly, and (b) the crew completes the crew drill requirement within the time specified for the engagement. In critiquing the crew's performance, the platoon leader should begin with a review of each individual crewmember's performance, followed by a review of the tank crew's overall performance. Tank crews passing the appraisal (GO) should be certified on their Crew Drills Training Record, while those that fail (NO-GO) should be instructed to practice the crew drill until the identified individual and/or crew training deficiencies are removed. This failure should be noted on their Training Record until they become crew drill certified.

## GUIDELINES FOR QUALITY CONTROL

The purpose of quality controlling a training subsystem is to provide commanders/training managers with the information necessary to prepare or revise future training plans. If neglected, or poorly done, the total training subsystem becomes static and eventually incapable of meeting the needs of the unit or the individuals for whom it was designed.

In the present approach to crew drills training, guidelines for establishing quality control measure are undefined. Although commanders/training managers are usually cognizant of the need for such measures, the guidance needed to implement a quality control program is not available.

In the proposed crew drills, specific guidelines are established for both the company commander and the platoon leader. For the company commander, a five-step procedure is recommended for monitoring training program success. Specifically, company commanders should, (a) randomly select at least two tank crews from the company, (b) pick out both individual and crew performance tasks for verification, (c) conduct the evaluation, (d) verify the results with previously obtained evaluation reports, and (e) if grossly different, introduce whatever corrective actions are deemed necessary. Company commanders should continue to stay abreast of the total crew drills training effort by developing a company training record similar to the Crew Drills Training Record for tank crews.

At the platoon leader level, a similar training program monitoring process is provided to help platoon leaders continuously update the achievement of their individual tank crews. It is recommended that platoon leaders, (a) randomly select tank crews to verify adherence to the training approach, (b) conduct regular meetings with various crewmembers to determine their attitudes toward training and what improvements, if any, they feel would contribute to a better quality program, and (c) submit regular progress reports to the company commander informing him of the platoon's training status. Like the company commander, platoon leaders should construct a training record to assist them in their quality control efforts.

## PART II. DEVELOPMENT OF PROTOTYPE CREW DRILLS TRAINING PROGRAMS

### LITERATURE REVIEW

To become familiar with the capabilities of the M1, M60A3 and M60A1(AOS) tank weapon systems, a review of the available technical documentation was conducted. The Operators Manual for the three tanks (TM 9-2350-255-10-1, TM 9-2350-253-10, TM 9-2350-215-10) provides tank crewmembers with the necessary information to operate the tank under usual and unusual conditions, check it for proper operation and keep it serviceable, and to prepare each crew station for operation. The Tank Gunnery Field Manual for each tank (FM 17-12-1, FM 17-12-2, FM 17-12-3) provides tank crewmembers with the gunnery doctrine and techniques unique to the weapon system. Included in each FM are the Tank Crew Gunnery Skills Test, Gunnery Firing Tables, and Firing Table Score Sheets. The Crew Drills Training Circulars reviewed earlier during the development of the collective training model, provide the training objectives, training/evaluation guidelines, and recommended performance steps unique to each weapon system. They provide a series of tank gunnery and mobility drills designed to enable a tank crew to destroy enemy targets and survive on a modern battlefield.

In addition to these sources, SMEs from the Weapon's Department, US Army Armor School were contacted frequently to discuss problems not fully explained or understood from the documentation.

### IDENTIFICATION OF GUNNERY DOMAINS

In reviewing the technical and gunnery literature, it became apparent that the domain of possible gunnery tasks for the M1 and M60A3 could not be specified as it could for the M60A1(AOS) (Kraemer and Boldovici, 1975). A short cut approach needed to be taken that would generate the same results. Working within this framework, a matrix of engagement conditions by level of conditions possible was identified for each tank weapon system (see Table 1). A greater number of engagement possibilities exists for the M1 Abrams tank versus the M60A3 or M60A1(AOS). The same holds true for the M60A3 versus the M60A1(AOS). For both tanks, the increase is due to the enhanced capabilities of the fire control system.

Within each domain of possible engagements there exists several systems performance requirements fundamental to all tank weapons. The first of these is to engage main gun targets from the gunner's station. A secondary requirement is to engage coax or caliber .50 targets from the gunner and tank commander's stations respectively. A third is to engage targets at night using direct or indirect methods of fire. A fourth and final requirement is to engage targets under degraded conditions, such as a primary sight failure.

In addition to these requirements there are several combinations of threat and Army vehicle modes that combine to define tank crew performance. As shown in Table 1, single, multiple or simultaneous targets can be engaged by a tank crew. Targets can be moving or stationary and, depending on the weapon system, can be engaged while the gun platform is stationary, moving, or from a brief halt.

TABLE 1. Engagement Conditions and Levels of Conditions Possible for Three Armor Weapon Systems.

| Crew Member | Weapon | Firing Mode | Firing Vehicle Motion | Number of Target | Target Motion | Target Type | Day or Night | Fire Control Instrument | Ammunition |
|---|---|---|---|---|---|---|---|---|---|
| Tank Commander | Main Gun | Normal | Stationary | Single | Stationary | Tank (TNK) or Light Armored Vehicle (LAV) | Day | Gunner's Primary Sight | SABOT or HEAT |
| Gunner | Coax | Emergency | Moving to-a-halt | Simultaneous | Moving | Thin-skinned Vehicle (TSV) | Day or Night (M1/A3) | Cmdr's Main Gun Day Sight | HEP |
| Loader (M1 Only) | .50 Caliber | Degraded | Moving (M1/A3) | Multiple (3) | | TSV or Crew-Served Weapon | Night | Gunner's Auxiliary Sight | BEEHIVE |
| | M240 Machinegun (M1 Only) | | | | | Bunker or Crew-Served Weapon | | Gunner's Night Sight | 7.62mm |
| | | | | | | Troops | | Cmdr's Main Gun Night Sight | .50 Caliber |
| | | | | | | Aircraft | | Cmdr's Wpn Sight (.50) | |

Using these data sources a tentative list of tank gunnery requirements was identified for each weapon system domain. The next step was to select those which were considered most representative.

## SELECTION OF TANK GUNNERY CREW DRILLS

Table 2 identifies the sets of gunnery crew drills selected by ARI and DTD personnel to be representative of M1, M60A3 and M60A1(AOS) gunnery domains. Thirteen crew drills were chosen for the M60A1(AOS) while 11 were selected for both the M1 and M60A3 tanks. On examination it will be noticed that several crew drills were excluded from one or another of the domains. The reasons for the M1 crew drill exclusions are several. The two indirect fire engagements were excluded since the M1 has neither an azimuth indicator nor an elevation quadrant for range card firing. Second, the M1 has a thermal imaging system which is used instead of or as a replacement for an inoperable periscope. As such, the telescope would only be used in an extremely degraded condition. The rationale for excluding the simultaneous engagement for both the M1 and M60A3 tanks is based on respective gunnery doctrine. The reason given is that the task is extremely difficult to perform and would best be accomplished from a short halt.

Further examination of the M60A3 crew drills will show that the multiple moving target engagement from a moving tank was excluded. The latest M60A3 gunnery doctrine (FM 17-12-3) recommends that the crew come to a short halt to engage moving targets. Also, excluded from the M60A3 crew drills, as well as the M60A1(AOS) crew drills are the two loader engagements. Neither of these crew drills are possible given the present weapon capabilities of each system.

## IDENTIFICATION OF GUNNERY TASK REQUIREMENTS

Having selected the engagements to be included in the crew drills program, the next step was to identify the gunnery task requirements or activities performed by the individual crewmember. This was accomplished by breaking down the engagement into discrete phases, and then listing whatever activities were required to perform them.

Five (5) phases were identified during target engagements. The first phase identified was target acquisition. In this phase tank crewmembers search the terrain to detect targets and then report the target by alerting the crew. During this analysis several ancillary decisions were made. It was decided to, (a) restrict engagements conducted from a stationary tank to a turret-down position, (b) limit target acquisition to the tank commander, and (c) identify activities that could be omitted from an engagement by an asterisk (*). The results of these decisions and analysis of the target acquisition phase are shown in the prototype crew drill presented in Appendix A.

The second phase identified was fire preparation. In this phase the tank commander issues a fire command while (a) the gunner issues driving commands (if required) and readies the fire controls, (b) the loader arms the weapon, and (c) the driver maintains or moves the tank into firing position. (See Appendix A.)

TABLE 2. Tank Gunnery Crew Drills Selected For M1, M60A3 and M60A1(AOS) Training.

| TANK/DRILL IDENTIFICATION | | | CREW | TANK | ENGAGEMENT | | | SIGHTING | SYSTEM |
|---|---|---|---|---|---|---|---|---|---|
| M1 | M60A3 | M60A1(AOS) | MEMBER | WEAPON(S) | TYPE | MODE | METHOD | INSTRUMENT | FAILURE |
| 1. | 1. | 1. | GNR | MAIN GUN | SINGLE | STA/STA | PRE[d] | PERISCOPE | NONE |
| 2. | 2. | 2. | GNR | MAIN GUN | SINGLE | STA/MOV | PRE | PERISCOPE | NONE |
| - | 3. | 3. | GNR | MAIN GUN | SINGLE | STA/MOV | PRE | TELESCOPE | PERISCOPE |
| 3. | 4. | 4. | GNR/TC | MAIN/.50 | SIMUL | STA/MOV | PRE | PERISCOPE | NONE |
| 4. | 5. | 5. | GNR | MAIN GUN | MULT | STA/MOV | PRE | PERISCOPE | NONE |
| 5. | 6. | 6[a]. | GNR | MAIN GUN | SINGLE | MOV/STA | PRE | PERISCOPE | NONE |
| 6[b]. | 7. | 7[c]. | GNR | MAIN GUN | SINGLE | MOV/STA | BS[e] | PERISCOPE | NONE |
| 7[c]. | 8[c]. | 8. | GNR | COAX MG | MULT | MOV/STA | SUP[f] | INFINITY | NONE |
| 8. | 9[b]. | 9[b]. | GNR | MAIN GUN | SINGLE | MOV/MOV | PRE | PERISCOPE | NONE |
| - | - | 10[b]. | GNR/TC | MAIN/.50 | SIMUL | MOV/MOV | PRE | PERISCOPE | NONE |
| 9. | - | 11[b]. | GNR | MAIN GUN | MULT | MOV/STA | PRE | PERISCOPE | NONE |
| - | 10. | 12. | GNR | MAIN GUN | MULT | STA/STA | RC[g] | AUXILIARY | NONE |
| - | 11. | 13. | GNR | MAIN GUN | SINGLE | STA/MOV | RCLDF[h] | AUX/PER | NONE |
| 10. | - | - | LDR | M240 | SINGLE | MOV/STA | SUP | NONE | NONE |
| 11. | - | - | LDR/TC | M240/.50 | SIMUL | STA/MOV | SUP | NONE | NONE |

[a]Main gun engagements beyond 1600 meters from a M60A1(AOS) tank are to be fired from a brief halt.
[b]Battlesight engagements are fired from an M1 tank only if the laser rangefinder is inoperable.
[c]The periscope can be used to provide suppressive fire.
[d]Precision. [e]Battlesight. [f]Suppressive. [g]Range Card. [h]Range Card Lay to Direct Fire.

The third target engagement phase identified was first round firing. During this phase, (a) the tank commander determines range or verifies that the range obtained was acceptable and commands "FIRE," while (b) the gunner lays on target, tracks (if required), ranges (if possible) and actually fires the weapon, (c) the loader obtains a second round for firing or gets into position to do so, and (d) the driver steers toward the target and/or maintains a steady platform for firing. (See Appendix A.)

The fourth phase identified in an engagement was the fire adjustment phase. Here the tank commander round senses and then issues a subsequent fire command to either continue, modify, or end the engagement. The remainder of the crew round senses (if possible) and responds to the subsequent fire command. In conducting this analysis, another decision was made that affects overall crew drill development. With more than one option available to the tank commander, the decision was made to identify each possibility and allow the tank commander the option to exercise any or all of them during a crew drill performance. Since the option selected had a direct impact on subsequent crewmember performances, each crewmember was instructed to perform specific activities that preceded or followed this phase. A brief inspection of the crew drill presented in Appendix A should help clarify this decision.

The fifth phase identified in an engagement, if necessary, was second round firing. Here the tank commander and crew repeat many of the activities identified for firing the first round. The (a) tank commander determines, verifies or issues range and deflection corrections and commands "FIRE," (b) the gunner relays, relases or applies range corrections, and fires, (c) the loader reloads, rearms and prepares for a third round firing, and (d) the driver continues to drive or maintain engine control. (See Appendix A.)

The sixth and last phase identified in an engagement was the post action phase. For single engagements the tank commander would announce "CEASE FIRE" and the crew would return the fire control system to its original status. Had the crew fired from a hull-down position, it would return to the turret-down or alternate firing position, as required based on target destruction. If firing on the move or from a short halt the crew would either (a) continue to move (target destroyed), (b) seek a hull-down position (target miss), or (c) resume moving straight ahead or to a hull-down position. For multiple engagements the crew would repeat the engagement from either an alternate firing position (if stationary) or on the move (if moving).

After the performance requirements were identified for the selected engagements as described, they were presented to weapon system SMEs for content validation. Changes and modifications were subsequently made as a result of these reviews until they were finally agreed upon by ARI and DTD personnel.

## IDENTIFICATION OF CRITICAL TASKS

The task requirements identified above provided the document by which a group of SMEs were asked to rate task criticality. In doing so they were instructed that tasks were to be rated critical to crew drill performance if they (a) could be observed and measured by an evaluator and (b) if failure to

perform the task correctly could result in a failure to meet the time and accuracy standards established for the crew drill. After rating each crew drill, the SMEs were asked to get together and resolve whatever disagreements they had among them.

The results of this effort were considered acceptable until later field evaluation could be conducted to determine its validity. Additional efforts were taken by ARI, however, to maintain consistency among tasks rated as critical to crew drills performance. A task which was not rated critical in one crew drill but was rated critical in a similar crew drill was changed to critical.

## PREPARATION OF TRAINING CONDITIONS MATRIX

As mentioned earlier in describing the proposed crew drills approach, the tank commander is provided with a list of equipment conditions by crew station and crew drill. The purpose of such a conditions matrix was to standardize the gunnery engagement procedures across tank crews for both training and evaluation.

The conditions matrix presented herein was prepared primarily as a by-product of the task detailing accomplished earlier. Specific assumptions were made regarding the status of the vehicle and equipment operated by the tank crew. For example, when the tank was stationary it was assumed that it would be in a turret-down defensive posture. As such, the tank commander and loader hatches would be open while they both attempted to locate possible targets. For the other crewmembers it was assumed the engine would be operating while the gunner would be maintaining the fire control system.

Given this scenario, further equipment status conditions evolved for each crew station. This included which weapons were armed or safed for firing, what ammunition was loaded, if any, whether the turret was operating in power or manual mode, the position of the turret lock, transmission shift control, etc. A complete listing of the conditions that were determined to affect crew drill performance is presented in Appendix A as Table A-2.

## DEVELOPMENT OF CREW DRILLS TRAINING RECORD

In keeping with the guidelines recommended for quality controlling the crew drills training program, a training record was developed for certifying successful performance. This training record or form would be completed by the platoon leader/sergeant to indicate when an individual tank crew last qualified or failed to perform a particular crew drill. Maintenance of the training record was the responsibility of each tank crew.

In developing the training record it became apparent that with minor modification the training record should be expanded to include the development of crew drills proficiency at increased levels of task difficulty. In other words, a tank crew should be required to perform each of the crew drills under a set of conditions that more closely paralleled the real-world requirements of combat. At the first level of task difficulty, the crew drills would be performed with the hatches open and without protective masks. At the next level, the

crew would have to wear protective masks while keeping the hatches open. This would continue until both hatches are closed and protective masks are worn. From there tank crews would be tasked to perform the crew drill under degraded conditions, i.e., computer inoperable, turret power control failure, sight failure, etc.

The results of this layering of task difficulty are tank crews proficient in tank gunnery; proficient in the sense that they can perform each of the tank gunnery engagements under conditions that more closely represent battlefield conditions. By providing the means for this to take place, the training record becomes an immediate indicator of unit readiness. Whether it proves to be this useful depends entirely on the quality control program established by the unit commander.

## DOCUMENTATION OF CREW DRILLS MATERIALS

Several activities were conducted to document the crew drills materials. The first was to design a format that would present the individual crewmember activities in a form that the tank commander could use for training and the platoon leader for evaluation. For training purposes, several methods were explored with mixed results. Initially, a flow chart was developed which linked individual crewmember activities together on a time line coincident with tank commander activities. This approach had a certain amount of cognitive appeal, but overwhelmed most of the SMEs who were asked to review it during the content-validation effort mentioned above. A second method was developed based on SME recommendations which eliminated the flow chart and merely listed the activities as presented in the first approach. This method was accepted by the SMEs.

The second activity undertaken was to determine the design for crew drills evaluation. Initially, it was decided to list each of the critical crewmember tasks identified earlier in the form of a pass-fail checklist. Next to each task rating column would be a listing of the Soldier's Manual (SM) task number. When crewmembers were found deficient at a given task they could be referred to the appropriate SM for remediation. This was developed and presented to SMEs for review and comment. Most of the SMEs approved of the reference to the SM, but felt that it would be an "over kill" if presented to tank commanders as part of the crew drills. They also indicated a need to know the specific tasks that they would be evaluated on during crew drills evaluation.

Considering the results of the SME review, a second effort was made to produce a crew drills evaluation form useable to both tank commander and platoon leader. After experimenting with several alternatives, it was decided to locate a box (□) next to each of the crewmember activities identified as essential to crew drill accomplishment. This would satisfy two purposes. First, it would insure that both the trainers and evaluators were working from the same "sheet of music." Second, it would eliminate the need to add an additional layer of evaluation forms to an already over-burdened system. Feedback from SMEs who have asked to review the drills indicated that both purposes were met, and that the crew drills should be acceptable to other tank commanders.

The final activity in documenting the crew drills was to present them in such a manner that they would be useable for both tank delivered training and evaluation. Several approaches were tried involving print reduction, type of paper, and paper size. On the basis of these tryouts it was decided that crew drills should be presented on the front and back of a single 8 1/2 x 11 inch sheet of paper with minimum reduction, where necessary. When presented to tank crews for use on board tanks they should be inclosed in a protective plastic cover or laminated to prevent damage.

## SUMMARY AND CONCLUSION

The goal of the research was to bridge the gap between individual and tank gunnery crew drills training. To achieve this goal, two major research objectives were formulated. The primary objective was to design a crew drills training approach that would incorporate the concept of dry-fire training in a low cost environment. The secondary objective was to develop a set of prototype tank gunnery crew drills training programs that could be used to determine the feasibility of the collective training design. Both of these research objectives have been achieved with the drills described in this report.

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APPENDIX A. CREW DRILLS FOR M1 GENERAL ABRAMS TANK GUNNERY

## TANK GUNNERY CREW DRILLS TRAINING

INTRODUCTION: The key to successful team performance is practice. For example, the top teams in professional sports are those that continuously practice the basic things that make them successful. When they work out, their practice sessions are serious and dedicated to being the best both individually and as a team. They're willing to pay the price so they accept the hard work and the time it takes to get it right. When game time comes around they're ready. They not only know their individual assignments, but they have acquired the team skills and timing necessary to win.

The tank gunnery crew drills are the basic things that your tank crew must practice to be successful in combat. They are the gunnery engagement procedures that your tank crew will most likely perform on the next battlefield and must execute perfectly to win and survive. When the flag drops your tank crew will have to out-maneuver and outshoot an enemy superior in number and capable of blowing you away. If your tank crew hesitates in putting steel on target immediately, almost automatically, they will not survive. To be ready for combat you and your M1 tank crew must be totally committed to going the whole nine yards. Under your leadership, they must be willing to practice until everyone has acquired both the individual and team gunnery skills to win.

There is no other answer!

CHARACTERISTICS: There are 11 crew drills considered fundamental to M1 Abrams tank gunnery. Each crew drill has a procedures guide which identifies the performance steps crewmembers must make during each phase of an engagement. It also identifies the more critical gunnery steps that can be observed to check-out individual crewmember performance. These tank gunnery crew drills are designed specifically for open hatch operations during daylight and without the use of live ammunition. More realistic battlefield conditions that can be exercised when dry-firing each crew drill are outlined in Table A-1. Specific equipment conditions that must be established prior to crew drills training are presented in Table A-2.

RESPONSIBILITIES: You, the tank commander, are the primary trainer for crew drills. It is your responsibility to provide each crewmember with the training required to successfully perform each of the engagements. Every opportunity, scheduled and unscheduled, must be seized to train your crew. Platoon leaders/sergeants should be looked to for training assistance. However, it is your tank crew and how well they perform in combat will depend entirely on how well you prepared them during training.

TRAINING APPROACH: To accomplish crew drill training, the following approach is recommended:

1. Introduce the Crew Drill. State the task to be trained and the performance standards specified in FM 17-12-1. Point out the importance of conducting the crew drill, why it is being trained using dry-fire methods, and how it relates to gunnery performance expected on the battlefield.

2. Demonstrate. Talk each crewmember through the tank gunnery procedure using the procedures guide. Show them where their individual performances contribute collectively to the success or failure of the gunnery engagement. Using the asterisked (*) items, show them how a performance step might be included during an engagement.

3. Get Set-up. Instruct your crew to enter the tank. When ready, conduct a prepare-to-fire check. Next, select the battlefield condition to be trained (Table A-1), and set-up the equipment (Table A-2). For the purpose of dry-fire training, tell the loader to leave the breech open for loading a "second" round, and to assume a battlesight condition. Tell the gunner to simulate the actual firing of a live main gun round and to announce a round sensing.

4. Practice. Issue an appropriate fire command to begin the engagement. Proceed gradually, reviewing each crewmember's individual task performance. When an error is noted that can be easily fixed, provide immediate hands-on instruction. Otherwise, notify him of the deficiency and arrange for remedial training. If more timing and coordination is required between two crewmembers, arrange the time to let them practice. Repeat the engagement as often as necessary to meet the crew drill standards.

5. Train For Combat. Increase the difficulty of the task by practicing it under the remaining battlefield conditions identified in Table A-1. Close the hatches, put on protective masks, use manual controls, simulate a three-man crew, and practice what is required when there are weapon system failures.

6. Get Certified. Once your tank crew has mastered a given crew drill across all battlefield conditions, contact your platoon leader or sergeant and ask him to certify your tank's readiness. Have him review your performance and record your progress on Table A-1.

## STATIONARY TANK/STATIONARY TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|
| 1. Acquire/Identify Target. | Maintain Fire Control System. | Search For Target. | Monitor Displays. |
| | Monitor Commands. | *Acquire/Identify Target. | Monitor Engine RPM. |
| | | *Report Target. | Monitor Commands. |
| 2. Issue Fire Command. ☐ | Insure Laser In ARM LAST RTN. | Drop Down Into Turret. | Insure TACTICAL IDLE In ON. |
| | Insure FIRE CONTROL MODE Switch In NORMAL. | Insure Turret Is UNLOCKED/Clear. | |
| | Insure Announced Ammo Is Indexed. | Insure GUN/TURRET DRIVE In POWERED. | |
| | Insure GPS MAGNIFICATION Clear. | | |
| | Place GUN SELECT In MAIN. ☐ | | |
| 3. Lay Gun For Direction ☐ | Look Through GAS. ☐ | *Close/Lock Hatch. | Listen For Driving Command. |
| 4. Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Issue Driving Commands. | Insure Path Of Recoil Is Clear. | Release Parking Brakes. ☐ |
| | | | Drive Tank Forward. ☐ |
| 5. Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain. | Swing Ejection Guard REARWARD. ☐ | Stop Tank. ☐ |
| | Announce "DRIVER STOP." ☐ | Insure ARMED Light Is Lit. | |
| | Look Through GPS. ☐ | | |
| 6. Listen For "UP." | Detect/Recognize Target. | Announce "UP." ☐ | Shift To R. ☐ |
| | Listen For "UP." | | |
| 7. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Hold Brake Depressed. ☐ |
| 8. Release Override. ☐ | Switch GPS MAGNIFICATION [illegible]. ☐ | *Place TURRET BLOWER In ON. | Monitor Displays. |
| 9. Look Through GPS Extension At Target. ☐ | Lay Reticle On Target As [illegible]. ☐ | Turn Toward Knee Switch. | Monitor Engine RPM. ☐ |
| 10. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 11. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 12. Monitor Laser Firing. | Push/Release Laser Button. ☐ | Brace For Recoil. | Brace For Recoil. |
| 13. Verify Firing Status. | Check Range Return. | | |
| | Check Multiple Returns Bar. | | |
| | Check Ready To Fire Symbol. | | |
| | Check Possible Misfire Symbol. | | |
| 14. Brace For Recoil. | Make Control Lay. | | |
| | Squeeze Firing Trigger. ☐ | | |
| 15. *Announce Sensing. | Relay Reticle On [illegible]. ☐ | Swing Ejection Guard FORWARD. ☐ | Listen For Driving Command. |
| | Announce Sensing. ☐ | Insure SAFE Light Is Lit. | |
| | Listen For TC Command. | Press/Hold Knee Switch. | |
| | | Remove Announced Round From Rack. ☐ | |
| | | Release Knee Switch. | |
| | | Load Round. ☐ | |
| 16. *Issue Subsequent Fire Command: ☐ | *Respond To TC Command. ☐ | *Respond To TC Command: ☐ | *Respond To TC Command: ☐ |
| . Command "REENGAGE." Then Steps 17-22. | . Do Steps 17-22. | . Do Steps 17-22. | . Do Steps 17-22. |
| . Command "CEASE FIRE," Then Steps 24-25. | . Do Steps 23-25. | . Do Steps 23-25. | . Do Steps 23-25. |

| | | | | |
|---|---|---|---|---|
| 17. Listen For "UP." | Listen For "UP." | | Insure Path Of Recoil Is Clear. | Monitor Displays. |
| | *Track Target. | | Swing Ejection Guard REARWARD. ☐ | Monitor Engine RPM . ☐ |
| | | | Insure ARMED Light Is Lit. | Monitor Commands. |
| | | | Announce "UP." ☐ | |
| 18. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | | Listen For "ON THE WAY." | |
| 19. Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | | Brace For Recoil. | Brace For Recoil. |
| 20. Verify Firing Status. | Check Range Return. | | | |
| | Check Multiple Returns Bar. | | | |
| | Check Ready To Fire Symbol. | | | |
| | Check Possible Fault Symbol. | | | |
| 21. Brace For Recoil. | Make Control Lay. | | | |
| | Squeeze Firing Trigger(s). ☐ | | | |
| | *Continue To Track | | | |
| 22. Announce Sensing. ☐ | Relay Reticle On Target Aiming Point. ☐ | | Swing Ejection Guard FORWARD. | Listen For Driving Command. |
| | Announce Sensing. ☐ | | Insure SAFE Light Is Lit. | |
| | Listen For TC Command. | | Press/Hold Knee Switch. | |
| | | | Remove Announced Round From Rack. | |
| | | | Release Knee Switch. | |
| | | | Load Round. | |
| | | | Listen For TC Command. | |
| 23. Issue Subsequent Fire Command: | Respond To TC Command: | | Respond To TC Command: | Respond To TC Command: |
| . Command "CEASE FIRE." ☐ | .*Release/Reengage Palm Switches. | | .*Place TURRET BLOWER In OFF. | . Prepare To Return To Turret-Down Or Alternate Firing Position. ☐ |
| | . Place GUN SELECT In TRIGGER SAFE. ☐ | | .*Reload Battlesight Round. | |
| | . Switch GPS MAGNIFICATION To 3X. ☐ | | | |
| 24. Move To Turret-Down Or Alternate Firing Position. ☐ | *Check/Adjust MRS. ☐ | | Check Replenisher Reservoir. ☐ | Follow Driving Commands. ☐ |
| | | | Remove Spent Casing(s). | |
| | | | Resume Target Search. | |
| 25. Acknowledge Crew Reports. | Report Firing Status. | | Report Loading Status. | Report Driving Status.. |

## STATIONARY TANK/MOVING TARGET ENGAGEMENT DRILL

### PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Maintain Fire Control System.<br>Monitor Commands. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Monitor Displays.<br>Monitor Engine RPM .<br>Monitor Commands. |
| 2. | Issue Fire Command. ☐ | Insure Laser In ARM LAST RTN.<br>Insure FIRE CONTROL MODE Switch In NORMAL.<br>Insure Announced Ammo Is Indexed.<br>Insure GPS MAGNIFICATION In 3X.<br>Place GUN SELECT In MAIN. ☐ | Drop Down Into Turret.<br>Insure Turret Is UNLOCKED/Clear.<br>Insure GUN/TURRET DRIVE In POWERED. | Insure TACTICAL IDLE In ON. |
| 3. | Lay Gun For Direction. ☐ | Look Through GAS. ☐ | *Close/Lock Hatch. | Listen For Driving Command. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Issue Driving Commands. | Insure Path Of Recoil Is Clear. | Release Parking Brakes. ☐<br>Drive Tank Forward. ☐ |
| 5. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain.<br>Announce "DRIVER STOP." ☐<br>Look Through GPS. | Swing Ejection Guard REARWARD. ☐<br>Insure ARMED Light Is Lit. | Stop Tank. ☐ |
| 6. | Listen For "UP." | Detect/Recognize Target.<br>Listen For "UP." | Announce "UP." ☐ | Shift To R. ☐ |
| 7. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Hold Brake Depressed. ☐ |
| 8. | Release Override. ☐ | Switch GPS MAGNIFICATION To 10X. ☐ | *Place TURRET BLOWER In ON. | Monitor Displays. |
| 9. | Look Through GPS Extension At Target. ☐ | Lay Reticle On Target Aiming Point. ☐<br>Track Target. ☐ | Turn Toward Knee Switch. | Monitor Engine RPM . ☐ |
| 10. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 11. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 12. | Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | Brace For Recoil. | Brace For Recoil. |
| 13. | Verify Firing Status. | Check Range Return.<br>Check Multiple Returns Bar.<br>Check Ready To Fire Symbol.<br>Check Possible Fault Symbol. | | |
| 14. | Brace For Recoil. | Make Control Lay.<br>Squeeze Firing Trigger(s). ☐<br>Continue To Track. | | |
| 15. | *Announce Sensing. | Relay Reticle On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Swing Ejection Guard FORWARD.<br>Insure SAFE Light Is Lit.<br>Press/Hold Knee Switch.<br>Remove Announced Round From Rack.<br>Release Knee Switch.<br>Load Round. | Listen For Driving Command. |
| 16. | *Issue Subsequent Fire Command: ☐<br>. Command "REENGAGE," Then Steps 17-22.<br>. Command "CEASE FIRE," Then Steps 24-25. | *Respond To TC Command: ☐<br>. Do Steps 17-22.<br>. Do Steps 23-25. | *Respond To TC Command: ☐<br>. Do Steps 17-22.<br>. Do Steps 23-25. | *Respond To TC Command: ☐<br>. Do Steps 17-22.<br>. Do Steps 23-25. |

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| 17. | Listen For "UP." | Listen For "UP."<br>*Track Target. | Insure Path Of Recoil Is Clear.<br>Swing Ejection Guard REARWARD.<br>Insure ARMED Light Is Lit.<br>Announce "UP." | Monitor Displays.<br>Monitor Engine RPM . ☐<br>Monitor Commands. |
| 18. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 19. | Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | Brace For Recoil. | Brace For Recoil. |
| 20. | Verify Firing Status. | Check Range Return.<br>Check Multiple Returns Bar.<br>Check Ready To Fire Symbol.<br>Check Possible Fault Symbol. | | |
| 21. | Brace For Recoil. | Make Control Lay.<br>Squeeze Firing Trigger(s). ☐<br>*Continue To Track. | | |
| 22. | Announce Sensing. ☐ | Relay Reticle On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Swing Ejection Guard FORWARD. ☐<br>Insure SAFE Light Is Lit.<br>Press/Hold Knee Switch.<br>Remove Announced Round From Rack ☐<br>Release Knee Switch.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 23. | Issue Subsequent Fire Command: ☐<br>. Command "CEASE FIRE." | Respond To TC Command: ☐<br>.*Release/Reengage Palm Switches.<br>. Place GUN SELECT In TRIGGER SAFE.<br>. Switch GPS MAGNIFICATION To 3X. | Respond To TC Command: ☐<br>.*Place TURRET BLOWER In OFF.<br>.*Reload Battlesight Round. | Respond To TC Command: ☐<br>. Prepare To Return To Turret-Down Or Alternate Firing Position. |
| 24. | Move To Turret-Down Or Alternate Position. | *Check/Adjust MRS. | Check Replenisher Reservoir. ☐<br>Remove Spent Casings.<br>Resume Target Search. | Follow Driving Commands. ☐ |
| 25. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## STATIONARY TANK/MULTIPLE TARGET ENGAGEMENT DRILL

### PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Maintain Fire Control System. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Monitor Displays.<br>Monitor Engine RPM .<br>Monitor Commands. |
| 2. | Issue Fire Command. ☐ | Insure Laser In ARM LAST RTN.<br>Insure FIRE CONTROL MODE Switch In NORMAL.<br>Insure Announced Ammo Is Indexed.<br>Insure GPS MAGNIFICATION In 3X.<br>Place GUN SELECT In MAIN. ☐ | Drop Down Into Turret.<br>Insure Turret Is UNLOCKED/Clear.<br>Insure GUN/TURRET DRIVE In POWERED. | Insure TACTICAL IDLE In ON. |
| 3. | Lay Gun For Direction. ☐ | Look Through GAS. ☐ | *Close/Lock Hatch. | Listen For Driving Command. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Issue Driving Commands. ☐ | Insure Path Of Recoil Is Clear. | Release Parking Brakes. ☐<br>Drive Tank Forward. ☐ |
| 5. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain.<br>Announce "DRIVER STOP." ☐<br>Look Through GPS. ☐ | Swing Ejection Guard REARWARD. ☐<br>Insure ARMED Light Is Lit. | Stop Tank. ☐ |
| 6. | Listen For "UP." | Detect/Recognize Target.<br>Listen For "UP." | Announce "UP." ☐ | Shift To R. ☐ |
| 7. | Listen For "IDENTIFIED." | Announce "IDENTIFIED, _____ TANK." ☐ | *Listen For "IDENTIFIED." | Hold Brake Depressed. ☐ |
| 8. | Release Override. ☐ | Switch GPS MAGNIFICATION To 10X. ☐ | *Place TURRET BLOWER In ON. | Monitor Engine RPM. ☐ |
| 9. | Look Through GPS Extension At Target. ☐ | Lay Reticle On Target Aiming Point. ☐ | Turn Toward Knee Switch. | Monitor Displays. |
| 10. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 11. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 12. | Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | Brace For Recoil. | Brace For Recoil. |
| 13. | Verify Firing Status. | Check Range Return.<br>Check Multiple Returns Bar.<br>Check Ready To Fire Symbol.<br>Check Possible Fault Symbol. | | |
| 14. | Brace For Recoil. | Make Control Lay.<br>Squeeze Firing Trigger(s). ☐ | | |
| 15. | *Announce Sensing. | Relay Reticle On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Swing Ejection Guard FORWARD. ☐<br>Insure SAFE Light Is Lit.<br>Press/Hold Knee Switch.<br>Remove Announced Round From Rack. ☐<br>Release Knee Switch.<br>Load Round. ☐ | Listen For Driving Command. |
| 16. | *Issue Subsequent Fire Command: ☐ | *Respond To TC Command: ☐ | *Respond To TC Command: ☐ | *Respond To TC Command: ☐ |
| | . Command "REENGAGE." Then Steps 19, 22-27. | . Do Steps 19, 22-27. | . Do Steps 17-27. | . Do Steps 17-27. |
| | . Command "DRIVER BACK UP ... STOP," Then Steps 30, 17-27. | . Do Steps 30, 18-27. | . Do Steps 30, 18-27. | . Do Steps 30, 18-27. |
| | . Command "(Next Target)," Then Steps 18-27. | . Do Steps 17-27. | . Do Steps 17-27. | . Do Steps 17-27. |
| | . Command "CEASE FIRE," Then Steps 28-31. | . Do Steps 28-29, 31. | . Do Steps 28-29, 31. | . Do Steps 28-29, 31. |

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| 17. Issue Fire Command. ☐ | Release/Reengage Palm Switches. ☐ | Insure Path Of Recoil Is Clear. | Listen For Driving Command. |
| 18. *Lay Gun For Direction. | Detect/Recognize Target. | Swing Ejection Guard REARWARD. ☐ | Monitor Displays. |
| 19. Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Monitor Engine RPM . ☐ |
| 20. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐<br>Lay Reticle On Target Aiming Point. ☐<br>*Track Target. | Listen For "IDENTIFIED." | Monitor Commands. |
| 21. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | |
| 22. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 23. Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | Brace For Recoil. | Brace For Recoil. |
| 24. Verify Firing Status. | Check Range Return.<br>Check Multiple Returns Bar.<br>Check Ready To Fire Symbol.<br>Check Possible Fault Symbol. | | |
| 25. Brace For Recoil. | Make Control Lay.<br>Squeeze Firing Trigger(s). ☐<br>*Continue To Track. | | |
| 26. Announce Sensing. ☐ | Relay Reticle On Target Aiming Point.<br>Announce Sensing.<br>Listen For TC Command. | Swing Ejection Guard FORWARD. ☐<br>Insure SAFE Light Is Lit.<br>Press/Hold Knee Switch.<br>Remove Announced Round From Rack ☐<br>Release Knee Switch.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 27. Issue Subsequent Fire Command: ☐<br>. Repeat Step 16. | Respond To TC Command: ☐<br>. Repeat Step 16. | Respond To TC Command: ☐<br>. Repeat Step 16. | Respond To TC Command: ☐<br>Repeat Step 16. |
| 28. Command "CEASE FIRE." ☐ | Release/Reengage Palm Switches. ☐<br>Place GUN SELECT In TRIGGER SAFE. ☐<br>Switch GPS MAGNIFICATION To 3X. ☐ | *Place TURRET BLOWER In OFF.<br>*Reload Battlesight Round. | Prepare To Return To Turret-Down Or Alternate Firing Position. |
| 29. Move To Turret-Down Position. ☐ | *Check/Adjust MRS. | Check Replenisher Reservoir. ☐ | Back Up Until TC Commands "DRIVER STOP." ☐ |
| 30. "DRIVER LEFT (RIGHT), SEEK ALTERNATE POSITION. GUNNER _____ TANK, TAKE OVER." ☐ | Look Through GAS. ☐<br>Insure Gun Is Clear Of Terrain.<br>Announce "DRIVER STOP." ☐<br>Look Through GPS. ☐ | Remove Spent Casing. | Drive To Alternate (Hull-Down) Position. ☐<br>Listen For "DRIVER STOP."<br>Stop Tank. ☐<br>Shift To R. ☐ |
| 31. Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## STATIONARY TANK/SIMULTANEOUS TARGET ENGAGEMENT DRILL

### PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Maintain Fire Control System. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Monitor Displays.<br>Monitor Engine RPM .<br>Monitor Commands. |
| 2. | Issue Fire Command. ☐ | Insure Laser In ARM LAST RTN.<br>Insure FIRE CONTROL MODE Switch In NORMAL.<br>Insure Announced Ammo Is Indexed.<br>Insure GPS MAGNIFICATION In 3X.<br>Place GUN SELECT In MAIN. ☐ | Drop Down Into Turret.<br>Insure Turret Is UNLOCKED/Clear.<br>Insure GUN/TURRET DRIVE In POWERED. | Insure TACTICAL IDLE In ON. |
| 3. | Lay Gun For Direction. ☐ | Look Through GAS. ☐ | *Close/Lock Hatch. | Listen For Driving Command. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Issue Driving Commands. ☐ | Insure Path Of Recoil Is Clear. | Release Parking Brakes. ☐<br>Drive Tank Forward. ☐ |
| 5. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain.<br>Announce "DRIVER STOP." ☐<br>Look Through GPS. ☐ | Swing Ejection Guard REARWARD. ☐<br>Insure ARMED Light Is Lit. | Stop Tank. ☐ |
| 6. | Listen For "UP." | Detect/Recognize Target.<br>Listen For "UP." | Announce "UP." ☐ | Shift To R. ☐ |
| 7. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Hold Brake Depressed. ☐ |
| 8. | Release Override. ☐ | Switch GPS MAGNIFICATION To 10X. ☐ | *Place TURRET BLOWER In ON. | Monitor Displays. |
| 9. | Move To Cal. 50. | Lay Reticle On Target Aiming Point. ☐ | Turn Toward Knee Switch. | Monitor Engine RPM . ☐ |
| 10. | Command "FIRE AND ADJUST, CALIBER FIFTY." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 11. | *Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 12. | Insure MANUAL/POWER Lever In POWER. | Push/Release Laser Button(s). ☐ | Brace For Recoil. | Brace For Recoil. |
| 13. | Place Cal. 50 In FIRE. ☐ | Check Range Return.<br>Check Multiple Returns Bar.<br>Check Ready To Fire Symbol.<br>Check Possible Fault Symbol. | | |
| 14. | *Brace For Recoil. | Make Control Lay.<br>Squeeze Firing Trigger(s). ☐ | | |
| 15. | Estimate Range To Cal. 50 Target. | Relay Reticle On Target Aiming Point. ☐<br>Announce Sensing. ☐ | Swing Ejection Guard FORWARD. ☐<br>Insure SAFE Light Is Lit.<br>Press/Hold Knee Switch.<br>Remove Announced Round From Rack. ☐<br>Release Knee Switch.<br>Load Round. ☐ | Listen For Driving Command. |
| 16. | Lay Cal .50 On Target. ☐ | Take Command Actions: ☐<br>. Fire Adjust, Then Steps 18-22.<br>. Announce "CEASE FIRE," Then Steps 17, 23-25. | *Respond To TC/Gunner Command: ☐<br>. Do Steps 18-22.<br>. Do Steps 23-25. | *Respond To TC/Gunner Commands: ☐<br>. Do Steps 17-22.<br>. Do Steps 23-25. |

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| 17. Fire 10-15 Round Burst. ☐ | Lay On Cal. 50 Target. ☐<br>Assist TC In Fire Adjustment. ☐<br>Listen For "TC COMPLETE." ☐ | Assist TC/Cal. 50 Operation. ☐<br>Listen For "TC COMPLETE." | Monitor Commands. | |
| 18. Sense Tracer Impact. | Listen For "UP."<br>*Track Target. | Insure Path Of Recoil Is Clear.<br>Swing Ejection Guard REARWARD. ☐<br>Announce "UP." ☐ | Monitor Displays.<br>Monitor Engine RPM . | ☐ |
| 19. Adjust Fire. ☐ | Announce "ON THE WAY." ☐<br>Push/Release Laser Button(s). ☐ | Listen For "ON THE WAY."<br>Brace For Recoil. | Brace For Recoil. | |
| 20. Announce "TC COMPLETE." ☐ | Check Range Return.<br>Check Multiple Returns Bar.<br>Check Ready To Fire Symbol.<br>Check Possible Fault Symbol. | | | |
| 21. *Place Cal. 50 In SAFE. ☐ | Make Control Lay.<br>Squeeze Firing Trigger(s). ☐<br>*Continue To Track. | | | |
| 22. *Announce Sensing. ☐ | Relay Reticle On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Swing Ejection Guard FORWARD. ☐<br>Insure SAFE Light Is Lit.<br>Press/Hold Knee Switch.<br>Remove Announced Round From Rack ☐<br>Release Knee Switch.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. | |
| 23. Issue Subsequent Fire Command: ☐<br>. Command "CEASE FIRE." | Respond To TC Command:<br>.*Release/Reengage Palm Switches.<br>. Place GUN SELECT In TRIGGER SAFE. ☐<br>. Switch GPS MAGNIFICATION To 3X. ☐ | Respond To TC Command: ☐<br>.*Place TURRET BLOWER In OFF.<br>.*Reload Battlesight Round. | Respond To TC Command: ☐<br>. Prepare To Return To Turret Down Or Alternate Firing Position. | |
| 24. Move To Turret-Down Or Alternate Position. ☐ | *Check/Adjust MRS. | Check Replenisher Reservoir. ☐<br>Remove Spent Casings.<br>Resume Tartet Search. | Follow Driving Commands. | ☐ |
| 25. Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. | |

## MOVING TANK/STATIONARY TARGET ENGAGEMENT DRILL

### PROCEDURES GUIDE

| TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|
| 1. Acquire/Identify Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Drive Tactically.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. Issue Fire Command. ☐ | Insure Laser In ARM LAST RTN.<br>Insure FIRE CONTROL MODE Switch In NORMAL.<br>Insure Announce Ammo Is Indexed.<br>Insure GPS MAGNIFICATION In 3X.<br>Place GUN SELECT In MAIN. ☐ | Drop Down Into Turret.<br>Insure Turret Is Unlocked/Clear.<br>Insure GUN/TURRET DRIVE In POWERED. | Listen For Driving Command. |
| 3. *Direct Driver Toward Target. | Look Through GPS. ☐ | *Close/Lock Hatch. | Follow Driving Command. ☐ |
| 4. Lay Gun For Direction. ☐ | Detect/Recognize Target. | Insure Path Of Recoil Is Clear.<br>Swing Ejection Guard REARWARD. ☐<br>Insure ARMED Light Is Lit. | Detect/Recognize Target.<br>Steer Toward Target. ☐ |
| 5. Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Search For Hull-Down Position. |
| 6. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Command. |
| 7. Release Override. ☐ | Switch GPS MAGNIFICATION To 10X. ☐ | *Place TURRET BLOWER In ON. | *Continue Search For Hull-Down Position. |
| 8. Look Through GPS EXTENSION. ☐ | Lay Reticle On Target Aiming Point. ☐<br>Track Target. ☐<br>Listen For Driver Alerts. | Turn Toward Knee Switch.<br>Listen For Driver Alerts. | Establish Steady Speed/Direction. ☐<br>Alert Crew Of Obstacles. ☐ |
| 9. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. ☐ |
| 10. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Maintain Steady Speed/Direction. ☐ |
| 11. Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | Brace For Recoil. | Brace For Recoil. |
| 12. Verify Firing Status. | Check Range Return.<br>Check Multiple Returns Bar.<br>Check Ready To Fire Symbol.<br>Check Possible Fault Symbol. | | |
| 13. Brace For Recoil. | Make Control Lay.<br>Squeeze Firing Trigger(s). ☐<br>Continue To Track. ☐ | | |
| 14. *Announce Sensing. | Relay Reticle On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Swing Ejection Guard FORWARD. ☐<br>Insure SAFE Light Is Lit.<br>*Place GUN/TURRET DRIVE In EL UNCPL.<br>Press/Hold Knee Switch.<br>Remove Announced Round From Rack. ☐<br>Release Knee Switch.<br>Load Round. ☐ | *Round Sense.<br>Listen For Driving Command. |
| 15. *Issue Subsequent Fire Command: ☐<br>. Command "REENGAGE," Then Steps 16-22.<br>. Command "CEASE FIRE," Then Steps 24-25. | *Respond To TC Command: ☐<br>. Do Steps 16-22.<br>. Do Steps 23-25. | *Respond To TC Command: ☐<br>. Do Steps 16-22.<br>. Do Steps 23-25. | *Respond To TC Command: ☐<br>. Do Steps 16-22.<br>. Do Steps 23-25. |

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| 16. Listen For "UP." | Listen For "UP." | | Insure Path Of Recoil Is Clear. | *Continue Search For Hull-Down Position. |
| | Listen For Driver Alerts. | | Swing Ejection Guard REARWARD. ☐ | Alert Crew Of Obstacles. ☐ |
| | Track Target. ☐ | | Insure ARMED Light Is Lit. | |
| | | | Announce "UP." ☐ | |
| 17. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | | Listen For "ON THE WAY." | Maintain Steady Speed/ Direction. ☐ |
| 18. Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | | Brace For Recoil. | Brace For Recoil. |
| 19. Verify Firing Status. | Check Range Return. | | | |
| | Check Multiple Returns Bar. | | | |
| | Check Ready To Fire Symbol. | | | |
| | Check Possible Fault Symbol. | | | |
| 20. Brace For Recoil. | Make Control Lay. | | | |
| | Squeeze Firing Trigger(s). ☐ | | | |
| | Continue To Track. ☐ | | | |
| 21. Announce Sensing. ☐ | Relay Reticle On Target Aiming Point. ☐ | | Swing Ejection Guard FORWARD. ☐ | *Round Sense. |
| | Announce Sensing. ☐ | | Insure SAFE Light Is Lit. | Listen For Driving Command. |
| | Listen For TC Command. | | Press/Hold Knee Switch. | |
| | | | Remove Announced Round From Rack ☐ | |
| | | | Release Knee Switch. | |
| | | | Load Round. ☐ | |
| | | | Listen For TC Command. | |
| 22. Issue Subsequent Fire Command: ☐ | Respond To TC Command: ☐ | | Respond To TC Command: ☐ | Respond To TC Command: ☐ |
| . Repeat Step 15. | . Repeat Step 15. | | . Repeat Step 15. | . Repeat Step 15. |
| 23. Command "CEASE FIRE." ☐ | *Release/Reengage Palm Switches. | | *Place TURRET BLOWER In OFF. | Drive Tactically. |
| | Place GUN SELECT In TRIGGER SAFE. ☐ | | *Place GUN/TURRET DRIVE In POWERED. | |
| | Switch GPS MAGNIFICATION To 3X. ☐ | | *Reload Battlesight Round. | |
| 24. *Issue Driving Command. | Continue To Scan. | | Check Replenisher Reservoir. ☐ | Follow Driving Command. ☐ |
| | Listen For Driver Alerts. | | Remove Spent Casings. | Alert Crew Of Obstacles. |
| | *Check/Adjust MRS. | | Resume Target Search. | Adjust Speed/Direction. ☐ |
| 25. Acknowledge Crew Reports. | Report Firing Status. | | Report Loading Status. | Report Driving Status. |

## MOVING TANK/MOVING TARGET ENGAGEMENT DRILL

### PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Drive Tactically.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. | Issue Fire Command. ☐ | Insure Laser In ARM LAST RTN.<br>Insure FIRE CONTROL MODE Switch In NORMAL.<br>Insure Announce Ammo Is Indexed.<br>Insure GPS MAGNIFICATION In 3X.<br>Place GUN SELECT In MAIN. ☐ | Drop Down Into Turret.<br>Insure Turret Is Clear.<br>Insure GUN/TURRET DRIVE In POWERED. | Listen For Driving Command. |
| 3. | *Direct Driver Toward Target. | Look Through GPS. ☐ | *Close/Lock Hatch. | Follow Driving Command. ☐ |
| 4. | Lay Gun For Direction. ☐ | Detect/Recognize Target. | Insure Path Of Recoil Is Clear.<br>Swing Ejection Guard REARWARD. ☐<br>Insure ARMED Light Is Lit. | Detect/Recognize Target.<br>Steer Toward Target. ☐ |
| 5. | Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Search For Hull-Down Position. |
| 6. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Command. |
| 7. | Release Override. ☐ | Switch GPS MAGNIFICATION To 10X. ☐ | *Place TURRET BLOWER In ON. | *Continue Search For Hull-Down Position. |
| 8. | Look Through GPS EXTENSION At Target. ☐ | Lay Reticle On Target Aiming Point. ☐<br>*Track Target.<br>Listen For Driver Alerts. | Turn Toward Knee Switch.<br>Listen For Driver Alerts. | Establish Steady Speed/ Direction. ☐<br>Alert Crew Of Obstacles. ☐ |
| 9. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 10. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Maintain Steady Speed/ Direction. ☐ |
| 11. | Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | Brace For Recoil. | Brace For Recoil. |
| 12. | Verify Firing Status. | Check Range Return.<br>Check Multiple Returns Bar.<br>Check Ready To Fire Symbol.<br>Check Possible Fault Symbol. | | |
| 13. | Brace For Recoil. | Make Control Lay.<br>Squeeze Firing Trigger(s). ☐<br>*Continue To Track. | | |
| 14. | *Announce Sensing. | Relay Reticle On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Swing Ejection Guard FORWARD. ☐<br>Insure SAFE Light Is Lit.<br>Select TURRET DRIVE In EL UNCPL.<br>Press/Hold Knee Switch.<br>Remove Announced Round From Rack. ☐<br>Release Knee Switch.<br>Load Round. ☐ | *Round Sense.<br>Listen For Driving Command. |
| 15. | *Issue Subsequent Fire Command: ☐<br>. Command "REENGAGE," Then Steps 16-22.<br>. Command "CEASE FIRE," Then Steps 24-25. | *Respond To TC Command: ☐<br>. Do Steps 16-22.<br>. Do Steps 23-25. | *Respond To TC Command: ☐<br>. Do Steps 16-22.<br>. Do Steps 23-25. | *Respond To TC Command: ☐<br>. Do Steps 16-22.<br>. Do Steps 23-25. |

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| 16. Listen For "UP." | Listen For "UP." | Insure Path Of Recoil Is Clear. | *Continue Search For Hull-Down Position. | |
| | Listen For Driver Alerts. | Swing Ejection Guard REARWARD. | Alert Crew Of Obstacles. | ☐ |
| | *Track Target. | Announce "UP." | | |
| 17. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Maintain Steady Speed/ Direction. | ☐ |
| 18. Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | Brace For Recoil. | Brace For Recoil. | |
| 19. Verify Firing Status. | Check Range Return. | | | |
| | Check Multiple Returns Bar. | | | |
| | Check Ready To Fire Symbol. | | | |
| | Check Possible Fault Symbol. | | | |
| 20. Brace For Recoil. | Make Control Lay. | | | |
| | Squeeze Firing Trigger(s). ☐ | | | |
| | *Continue To Track | | | |
| 21. Announce Sensing. ☐ | Relay Reticle On Target Aiming Point. ☐ | Swing Ejection Guard FORWARD. ☐ | *Round Sense. | |
| | Announce Sensing. ☐ | Insure SAFE Light Is Lit. | Listen For Driving Command. | |
| | Listen For TC Command. | Press/Hold Knee Switch. | | |
| | | Remove Announced Round From Rack. ☐ | | |
| | | Release Knee Switch. | | |
| | | Load Round. ☐ | | |
| | | Listen For TC Command. | | |
| 22. Issue Subsequent Fire Command: ☐ | Respond To TC Command: ☐ | Respond To TC Command: ☐ | Respond To TC Command: ☐ | |
| . Repeat Step 15. | . Repeat Step 15. | . Repeat Step 15. | . Repeat Step 15. | |
| 23. Command "CEASE FIRE." ☐ | *Release/Reengage Palm Switches. ☐ | *Place TURRET BLOWER In OFF. | Drive Tactically. | |
| | Place GUN SELECT In TRIGGER SAFE. ☐ | *Place GUN/TURRET DRIVE In POWERED. | | |
| | Switch GPS MAGNIFICATION To 3X. ☐ | *Reload Battlesight Round. | | |
| 24. *Issue Driving Command | Continue To Scan. | Check Replenisher Reservoir. ☐ | Follow Driving Command. ☐ | |
| | Listen For Driver Alerts. | Remove Spent Casings. | Alert Crew Of Obstacles. | |
| | *Check/Adjust MRS. | Resume Target Search. | Adjust Speed/Direction. ☐ | |
| 25. Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. | |

## MOVING TANK/MULTIPLE TARGET ENGAGEMENT DRILL

### PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Drive Tactically.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. | Issue Fire Command. ☐ | Insure Laser In ARM LAST RTN.<br>Insure FIRE CONTROL MODE Switch In NORMAL.<br>Insure Announce Ammo Is Indexed.<br>Insure GPS MAGNIFICATION In 3X.<br>Place GUN SELECT In MAIN. ☐ | Drop Down Into Turret.<br>Insure Turret Is Clear.<br>Insure GUN/TURRET DRIVE In POWERED. | Listen For Driving Command. |
| 3. | *Direct Driver Toward Target. | Look Through GPS. ☐ | *Close/Lock Hatch. | Follow Driving Command. ☐ |
| 4. | Lay Gun For Direction. ☐ | Detect/Recognize Target. | Insure Path Of Recoil Is Clear.<br>Swing Ejection Guard REARWARD. ☐<br>Insure ARMED Light Is Lit. | Detect/Recognize Target.<br>Steer Toward Target. ☐ |
| 5. | Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Search For Hull-Down Position. |
| 6. | Listen For "IDENTIFIED." | Announce "IDENTIFIED, _____ TANK." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Command. |
| 7. | Release Override. ☐ | Switch GPS MAGNIFICATION To 10X. ☐ | *Place TURRET BLOWER In ON. | *Continue Search For Hull-Down Position. |
| 8. | Look Through GPS EXTENSION At Target. ☐ | Lay Reticle On Target Aiming Point. ☐<br>Track Target. ☐<br>Listen For Driver Alerts. | Turn Toward Knee Switch.<br>Listen For Driver Alerts. | Establish Steady Speed/ Direction. ☐<br>Alert Crew Of Obstacles. ☐ |
| 9. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 10. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Maintain Steady Speed/ Direction. ☐ |
| 11. | Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | Brace For Recoil. | Brace For Recoil. |
| 12. | Verify Firing Status. | Check Range Return.<br>Check Multiple Returns Bar.<br>Check Ready To Fire Symbol.<br>Check Possible Fault Symbol. | | |
| 13. | Brace For Recoil. | Make Control Lay.<br>Squeeze Firing Trigger(s). ☐<br>Continue To Track. ☐ | | |
| 14. | *Announce Sensing. | Relay Reticle On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Swing Ejection Guard FORWARD. ☐<br>Insure SAFE Light Is Lit.<br>*Place GUN/TURRET DRIVE In EL UNCPL.<br>Press/Hold Knee Switch.<br>Remove Announced Round From Rack. ☐<br>Release Knee Switch.<br>Load Round. ☐ | *Round Sense.<br>Listen For Driving Command. |
| 15. | *Issue Subsequent Fire Command: ☐<br>. Command "REENGAGE." Then Steps 19, 22-27.<br>. Command "(Next Target)." Then Steps 16-27.<br>. Command "CEASE FIRE." Then Steps 29-30. | *Respond To TC Command: ☐<br>. Do Steps 19, 22-27.<br>. Do Steps 16-27.<br>. Do Steps 28-30. | *Respond To TC Command: ☐<br>. Do Steps 16-20, 22-27.<br>. Do Steps 16-27.<br>. Do Steps 28-30. | *Respond To TC Command: ☐<br>. Do Steps 20, 22-27.<br>. Do Steps 16-27.<br>. Do Steps 28-30. |

| | | | | |
|---|---|---|---|---|
| 16. Issue Fire Command. ☐ | Release/Reengage Palm Switches. ☐ | Insure Path Of Recoil Is Clear. | Listen For Driving Command. | |
| 17. *Direct Driver Toward Target. | Scan Target Area. | Swing Ejection Guard REARWARD. ☐ | Follow Driving Command. ☐ | |
| 18. *Lay Gun For Direction. | Detect/Recognize Target. | Insure ARMED Light Is Lit. | Steer Toward Target. ☐ | |
| 19. Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Establish Steady Speed/ Direction. ☐ | |
| 20. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Search For Hull-Down Position. | |
| | Lay Reticle On Target Aiming Point. ☐ | Listen For Driver Alerts. | Alert Crew Of Obstacles. ☐ | |
| | Track Target. ☐ | | | |
| | Listen For Driver Alerts. | | | |
| 21. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. | |
| 22. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Maintain Steady Speed/ Direction. ☐ | |
| 23. Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | Brace For Recoil. | Brace For Recoil. | |
| 24. Verify Firing Status. | Check Range Return. | | | |
| | Check Multiple Returns Bar. | | | |
| | Check Ready To Fire Symbol. | | | |
| | Check Possible Fault Symbol. | | | |
| 25. Brace For Recoil. | Make Control Lay. | | | |
| | Squeeze Firing Trigger(s). ☐ | | | |
| | Continue To Track. ☐ | | | |
| 26. Announce Sensing. ☐ | Relay Reticle On Target Aiming Point. ☐ | Swing Ejection Guard FORWARD. ☐ | *Round Sense. | |
| | Announce Sensing. ☐ | Insure SAFE Light Is Lit. | Listen For Driving Command. | |
| | Listen For TC Command. | Press/Hold Knee Switch. | | |
| | | Remove Announced Round From Rack ☐ | | |
| | | Release Knee Switch. | | |
| | | Load Round. ☐ | | |
| | | Listen For TC Command. | | |
| 27. Issue Subsequent Fire Command: ☐ | Respond To TC Command: ☐ | Respond To TC Command: ☐ | Respond To TC Command: ☐ | |
| . Repeat Step 15. | . Repeat Step 15. | . Repeat Step 15. | . Repeat Step 15. | |
| 28. Command "CEASE FIRE." ☐ | Release/Reengage Palm Switches. ☐ | *Place TURRET BLOWER In OFF. | Drive Tactically. | |
| | Place GUN SELECT In TRIGGER SAFE. ☐ | *Place GUN/TURRET DRIVE In POWERED. | | |
| | Switch GPS MAGNIFICATION To 3X. ☐ | *Reload Battlesight Round. | | |
| 29. *Issue Driving Command. | Continue To Scan. | Check Replenisher Reservoir. ☐ | Follow Driving Command. ☐ | |
| | Listen For Driver Alerts. | Remove Spent Casings. | Alert Crew Of Obstacles. | |
| | *Check/Adjust MRS. | Resume Target Search. | Adjust Speed/Direction. ☐ | |
| 30. Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. | |

## DEGRADED MODE TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Drive Tactically.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. | Issue Fire Command. ☐ | Insure Laser In SAFE.<br>Insure FIRE CONTROL MODE In NORMAL.<br>Insure Announce Ammo Is Indexed.<br>Insure GPS MAGNIFICATION In 3X.<br>Place GUN SELECT In MAIN. ☐ | Drop Down Into Turret.<br>Insure Turret Is Unlocked/Clear.<br>Insure GUN/TURRET DRIVE In POWERED. | Listen For Driving Command. |
| 3. | *Direct Driver Toward Target. | Look Through GPS. ☐ | *Close/Lock Hatch. | Follow Driving Command. ☐ |
| 4. | Lay Gun For Direction. ☐ | Detect/Recognize Target. | Insure Path Of Recoil Is Clear.<br>Swing Ejection Guard REARWARD. ☐<br>Insure ARMED Light Is Lit. | Detect/Recognize Target.<br>Steer Toward Target. ☐ |
| 5. | Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Search For Hull-Down Position. |
| 6. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Command. |
| 7. | Release Override. ☐ | Switch GPS MAGNIFICATION To 10X. ☐ | *Place TURRET BLOWER In ON. | *Continue Search For Hull-Down Position. |
| 8. | Depress MANUAL RANGE BATTLE SGT Button. ☐ | Lay Reticle On Target Center Of Mass. ☐ | Turn Toward Knee Switch. | Establish Steady Speed/Direction. ☐ |
| 9. | Look Through GPS Extension At Target. ☐ | Track Target. ☐<br>Apply Manual Lead. ☐<br>Listen For Driver Alerts. | Listen For Driver Alerts. | Alert Crew Of Obstacles. ☐ |
| 10. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 11. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Maintain Steady Speed/Direction. ☐ |
| 12. | Brace For Recoil. | Make Control Lay.<br>Squeeze Firing Trigger(s). ☐<br>Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 13. | *Announce Sensing. | Relay Reticle On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Swing Ejection Guard FORWARD. ☐<br>Insure SAFE Light Is Lit.<br>*Place GUN/TURRET DRIVE In EL UNCPL.<br>Press/Hold Knee Switch.<br>Remove Battlesight Round From Rack. ☐<br>Release Knee Switch.<br>Load Round. ☐ | *Round Sense.<br>Listen For Driving Command. |
| 14. | *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Steps 15-19.<br>. Let Gunner Adjust Fire, Then Steps 15-19.<br>. Command "CEASE FIRE," Then Steps 21-22. | *Respond To TC Command: ☐<br>. Apply TC Corrections, Then Steps 15-19.<br>. Fire Adjust, Then Steps 15-19.<br>. Do Steps 20-22. | *Respond To TC Command: ☐<br>. Do Steps 15-19.<br>. Do Steps 15-19.<br>. Do Steps 20-22. | *Respond To TC Command: ☐<br>. Do Steps 15-19.<br>. Do Steps 15-19.<br>. Do Steps 20-22. |

| | | | | |
|---|---|---|---|---|
| 15. Listen For "UP." | Listen For "UP." | | Insure Path Of Recoil Is Clear. | *Continue Search For Hull-Down Position. |
| | Listen For Driver Alerts. | | Swing Ejection Guard REARWARD. ☐ | Alert Crew Of Obstacles. ☐ |
| | Track Target. ☐ | | Announce "UP." ☐ | |
| 16. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | | Listen For "ON THE WAY." | Maintain Steady Speed/ Direction. ☐ |
| 17. Brace For Recoil. | Make Control Lay. | | Brace For Recoil. | Brace For Recoil. |
| | Squeeze Firing Trigger(s). ☐ | | | |
| | Continue To Track. ☐ | | | |
| 18. Announce Sensing. ☐ | Relay On Target Aiming Point. ☐ | | Swing Ejection Guard FORWARD. ☐ | *Round Sense. |
| | Announce Sensing. ☐ | | Insure SAFE Light Is Lit. | Listen For Driving Command. |
| | Listen For TC Command. | | Press/Hold Knee Switch. | |
| | | | Remove Battlesight® Round From Rack ☐ | |
| | | | Release Knee Switch. | |
| | | | Load Round. ☐ | |
| | | | Listen For TC Command. | |
| 19. Issue Subsequent Fire Command: ☐ | Respond To TC Command: ☐ | | Respond To TC Command: ☐ | Respond To TC Command: ☐ |
| . Repeat Step 14. | . Repeat Step 14. | | . Repeat Step 14. | . Repeat Step 14. |
| 20. Command "CEASE FIRE." ☐ | *Release/Reengage Palm Switches. | | *Place TURRET BLOWER In OFF. | Drive Tactically. |
| | Place GUN SELECT In TRIGGER SAFE. ☐ | | *Place GUN/TURRET DRIVE In POWERED. | |
| | Switch GPS MAGNIFICATION To 3X. ☐ | | *Reload Battlesight Round. | |
| 21. *Issue Driving Command. | Continue To Scan. | | Check Replenisher Reservoir. ☐ | Follow Driving Command. ☐ |
| | Listen For Driver Alerts. | | Remove Spent Casings. | Alert Crew Of Obstacles. |
| | *Check/Adjust MRS. ☐ | | Resume Target Search. | Adjust Speed/Direction. ☐ |
| 22. Acknowledge Crew Reports. | Report Firing Status. | | Report Loading Status. | Report Driving Status. |

## COAX TARGET ENGAGEMENT DRILL

### PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. | Issue Fire Command. ☐ | Insure Laser In ARM LAST RTN.<br>Insure FIRE CONTROL MODE In NORMAL.<br>Insure GPS MAGNIFICATION In 3X.<br>Place Coax Safety In F. ☐<br>Place GUN SELECT In COAX. ☐ | *Drop Down Into Turret.<br>Insure Turret Is Unlocked/Clear.<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | *Direct Driver Toward Target. | Look Through GPS. ☐ | Insure TURRET BLOWER Is Operating. | Follow Driving Command. ☐ |
| 4. | Lay Gun For Direction. ☐ | Detect/Recognize Target. | Detect/Recognize Target. | Detect/Recognize Target.<br>*Steer Toward Target. ☐ |
| 5. | Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | *Search For Hull-Down Positions. |
| 6. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Commands. |
| 7. | Release Override. ☐ | *Switch GPS MAGNIFICATION To 10X. | Acquire/Identify Target. | *Continue Search For Hull-Down Positions. |
| 8. | Look Thru GPS EXTENSION At Target. ☐ | Lay Reticle On Front Center Mass Of Target. ☐<br>Track Target. ☐<br>Listen For Driver Alerts. | Listen For Driver Alerts. | Maintain Steady Speed/ Direction. ☐<br>Alert Crew Of Obstacles. ☐ |
| 9. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Displays. |
| 10. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Monitor Commands. |
| 11. | Monitor Laser Firing. ☐ | Push/Release Laser Button(s). ☐ | | |
| 12. | Verify Firing Status. | Check Range Return.<br>Check Multiple Returns Bar.<br>Check Ready To Fire Symbol.<br>Check Possible Fault Symbol. | | |
| 13. | Observe Tracer Impact. | Release/Reengage Palm Switches. ☐<br>Fire 20-25 Round Burst In Z Pattern. ☐<br>Continue To Track. ☐ | Observe Tracer Impact.<br>Monitor Ammo Feed. ☐ | *Observe Tracer Impact. |
| 14. | *Announce Sensing. | *Announce Sensing.<br>Listen For TC Command. | *Round Sense.<br>Listen For TC Command. | *Round Sense.<br>Listen For Driving Command. |
| 15. | *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Repeat Steps 13-15.<br>. Let Gunner Adjust Fire, Then Repeat Steps 13-15.<br>. Command "CEASE FIRE," Then Steps 17-18. | Respond To TC Command: ☐<br>. Apply TC Corrections, Then Repeat Steps 13-15.<br>. Adjust Fire, Then Repeat Steps 13-15.<br>. Do Steps 16-18. | Respond To TC Command: ☐<br>. Repeat Steps 13-15.<br>. Repeat Steps 13-15.<br>. Do Steps 16-18. | Respond To TC Command: ☐<br>. Repeat Steps 13-15.<br>. Repeat Steps 13-15.<br>. Do Steps 16-18. |
| 16. | Command "CEASE FIRE." ☐ | *Release/Reengage Palm Switches.<br>Place GUN SELECT In TRIGGER SAFE. ☐<br>Place COAX Safety In S. ☐ | Insure TURRET BLOWER Goes Off. | Continue To Drive Tactically. |
| 17. | *Issue Driving Command. | Continue To Scan.<br>Listen For Driver Alerts.<br>*Check/Remove Spent Brass. | Reload Coax Ammo Box. ☐<br>Listen For Driver Alerts.<br>Resume Target Search. | Follow Driving Command. ☐<br>Adjust Speed/Direction. ☐<br>Alert Crew Of Obstacles. |
| 18. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## LOADER ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. | Issue Fire Command. ☐ | Continue Search For Targets In Main Threat Area. ☐ | Unlock M240 In Azimuth. ☐<br>Unlock M240 In Elevation. ☐<br>Place Safety In F. ☐ | Listen For Driving Command. |
| 3. | *Direct Driver Toward Target. | Detect/Recognize Target. | Detect/Recognize Target. | Follow Driving Command. ☐<br>Detect/Recognize Target. |
| 4. | Listen For "IDENTIFIED." | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Steer Toward Target. |
| 5. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." ☐<br>Lay On Center Of Target Area.<br>Track Target. ☐ | Maintain Steady Speed/ Direction. ☐<br>Alert Crew Of Obstacles. ☐ |
| 6. | Listen For "ON THE WAY." | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Monitor Commands. |
| 7. | Observe Tracer Impact. | *Observe Tracer Impact. | Fire 25-30 Round Burst In Z Pattern. | *Observe Tracer Impact. |
| 8. | *Announce Sensing. | *Round Sense.<br>Listen For TC Command. | *Announce Sensing.<br>Listen For TC Command. | *Round Sense.<br>Listen For Driving Command. |
| 9. | *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Repeat Steps 7-9.<br>. Let Loader Adjust Fire, Then Repeat Steps 7-9.<br>. Command "CEASE FIRE," Then Steps 11-12. | Respond To TC Command: ☐<br>*. Assist With Deflection Corrections, Then Steps 7-9.<br>*. Assist With Deflection Corrections, Then Steps 7-9.<br>. Do Steps 10-12. | Respond To TC Command: ☐<br>. Apply TC Corrections, Then Repeat Steps 7-9.<br>. Adjust Fire, Then Repeat Steps 7-9.<br>. Do Steps 10-12. | Respond To TC Command: ☐<br>. Repeat Steps 7-9.<br>. Repeat Steps 7-9.<br>. Do Steps 10-12. |
| 10. | Command "CEASE FIRE." ☐ | Continue To Scan. | Place M240 Safety In S. ☐<br>Lock M240 In Elevation. ☐<br>Lock M240 In Azimuth. ☐ | Continue To Drive Tactically. |
| 11. | *Issue Driving Command. | Listen For Driver Alerts. | Reload/Recharge M240. ☐<br>Remove Spent Casings.<br>Resume Target Search. | Follow Driving Command. ☐<br>Adjust Speed/Direction. ☐<br>Alert Crew Of Obstacles. |
| 12. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## HIGH PERFORMANCE AIRCRAFT ENGAGEMENT DRILL

### PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Maintain Fire Control Systems. | Search For Targets. | Monitor Engine RPMs. |
| | | Monitor Commands. | *Acquire/Identify Target. | Monitor Displays. |
| | | | *Report Target. | Monitor Commands. |
| 2. | Issue Fire Command. ☐ | Monitor Fire Command. ☐ | Unlock M240 In Azimuth. ☐ | Listen For Driving Command. |
| | | | Unlock M240 In Elevation. ☐ | |
| | | | Place Safety In F. ☐ | |
| 3. | *Direct Driver To Covered Position. | | Detect/Recognize Target. | Follow Driving Command. ☐ |
| 4. | Listen For "IDENTIFIED." | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Monitor Commands. |
| 5. | Command "FIRE CALIBER FIFTY." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Engine RPM. ☐ |
| 6. | Insure MANUAL/POWER Lever Is In POWER. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Monitor Displays. |
| 7. | Place Cal. 50 Safety In FIRE. ☐ | | Lay M240 On Target. ☐ | |
| 8. | Lay Cal. 50 On Target. ☐ | | Track Target. ☐ | |
| 9. | Track Target. ☐ | | *Wait Until Target Is Within Effective Range. | |
| 10. | Fire Continuous Burst. ☐ | | Fire Continuous Burst. ☐ | |
| 11. | Sense Tracer Impact. | Listen For "LOADER COMPLETE." | Sense Tracer Impact. | Listen For "LOADER COMPLETE." |
| 12. | Adjust Fire. ☐ | Listen For "TC COMPLETE." | Adjust Fire. ☐ | Listen For "TC COMPLETE." |
| 13. | Announce "TC COMPLETE." ☐ | | Announce "LOADER COMPLETE." ☐ | |
| 14. | Place Cal. 50 Safety In SAFE. ☐ | Listen For Fire Command. | Place M240 Safety In S. ☐ | Listen For Driving Command. |
| 15. | Reload/Recharge Cal. 50. ☐ | | Reload/Recharge M240. ☐ | |
| 16. | Remove Spent Casings. | | Remove Spent Casings. | |
| 17. | Resume Target Search. | | Resume Target Search. | |

# Table A-1

CREW DRILL TARGET SERVICING REQUIREMENTS
FOR M1 ABRAMS TANK CREWS

| CREW DRILLS | OPEN HATCH | | PROTECTED COVER | | CLOSED HATCH | | OPEN HATCH WITH MASK | | PROTECTIVE COVER WITH MASK | | CLOSED HATCH WITH MASK | | WEAPON SYSTEM FAILURE | | | | | 3 MAN CREW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | NIGHT | DAY | NIGHT | DAY | NIGHT | DAY | NIGHT | DAY | NIGHT | DAY | NIGHT | STAB SYSTEM | LASER RANGEFINDER | LEAD ANGLE SENSOR | COMPUTER | TURRET POWER | |
| 1. Single - Main Gun<br>Stationary vs. Stationary<br>GPS - Precision | | | | | | | | | | | | | | | | | | |
| 2. Single - Main Gun<br>Stationary vs. Moving<br>GPS - Precision | | | | | | | | | | | | | | | | | | |
| 3. Multiple - Main Gun<br>Stationary vs. Moving<br>GPS - Precision | | | | | | | | | | | | | | | | | | |
| 4. Simultaneous - Main Gun/.50 Cal<br>Stationary vs. Mov/Stationary<br>GPS - Precision/Suppressive | | | | | | | | | | | | | | | | | | |
| 5. Single - Main Gun<br>Moving vs. Stationary<br>GPS - Precision | | | | | | | | | | | | | | | | | | |
| 6. Single - Main Gun<br>Moving vs. Moving<br>GPS - Precision | | | | | | | | | | | | | | | | | | |
| 7. Multiple - Main Gun<br>Moving vs. Stationary<br>GPS - Precision | | | | | | | | | | | | | | | | | | |
| 8. Single - Main Gun<br>Moving vs. Moving<br>GPS - Battlesight | | | | | | | | | | | | | | | | | | |
| 9. Single - M240 Machinegun<br>Moving vs. Stationary<br>GPS - Suppressive | | | | | | | | | | | | | | | | | | |
| 10. Single - M240 Machinegun<br>Moving vs. Stationary<br>Suppressive | | | | | | | | | | | | | | | | | | |
| 11. Simultaneous - Loader M240/.50 Cal<br>Stationary vs. Moving<br>Suppressive | | | | | | | | | | | | | | | | | | |

NOTE: FOR EACH CREW DRILL, RECORD THE DATE ON WHICH TRAINING BEGAN AND ENDED. ALSO, MAKE CERTAIN THE LAST DATE ENTERED SHOWS THAT THE CREW DRILL WAS CHECKED OUT OR CERTIFIED BY THE PLATOON LEADER/SERGEANT.

Table A-2

M1 EQUIPMENT CONDITIONS BY CREW STATION

| | CREW DRILLS | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **TC STATION** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Vehicle Master Power Light is Lit | X | X | X | X | X | X | X | X | X | X | X |
| Turret Power in ON | X | X | X | X | X | X | X | X | X | X | X |
| Cmdr's Knee Guard in Firing Position | X | X | X | X | X | X | X | X | | | |
| Manual/Power Lever in POWER | | | | X | | | | | | | X |
| Cal .50 in SAFE | | | | X | | | | | | | X |
| **GUNNER'S STATION** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Laser in ARM LAST RTN | X | X | X | X | X | X | X | | X | | |
| Fire Control Mode in NORMAL | X | X | X | X | X | X | X | X | X | X | X |
| Ammunition Select in SABOT | X | X | X | X | X | X | X | X | X | X | X |
| Gun Select in TRIGGER SAFE | X | X | X | X | X | X | X | X | X | X | X |
| Gps Day Ballistic Door is Opened | X | X | X | X | X | X | X | X | X | X | X |
| Gps Magnification in 3X | X | X | X | X | X | X | X | X | X | X | X |
| Chest Rest in Firing Position | X | X | X | X | X | X | X | X | X | X | X |
| Laser in SAFE | | | | | | | | X | | X | X |
| Coax Safety in S | X | X | X | X | X | X | X | X | X | | |
| Coax is Loaded/Charged | | | | | | | | | X | | |
| Automatic Lead Cancelled | | | | | | | | X | | | |
| **LOADER'S STATION** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Turret Lock in UNLOCKED | X | X | X | X | X | X | X | X | X | X | X |
| Gun Turret Drive in POWERED | X | X | X | X | X | X | X | X | X | X | X |
| Ejection Guard Forward | X | X | X | X | X | X | X | X | X | X | X |
| Safe Light Lit | X | X | X | X | X | X | X | X | X | X | X |
| Breech Locked Opened | X | X | X | X | X | X | X | X | | | |
| Breech Locked Closed | | | | | | | | | X | X | X |
| M240 Locked in Azimuth and Elevation | | | | | | | | | | X | X |
| M240 Safety in S | | | | | | | | | | X | X |
| M240 is Loaded/Charged | | | | | | | | | | X | X |
| **DRIVER'S STATION** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Vehicle Master Power in ON | X | X | X | X | X | X | X | X | X | X | X |
| Tactical Idle in ON | X | X | X | X | | | | | | | |
| Engine Operating at 1250-1350 rpm | X | X | X | X | | | | | | | |
| Parking Service Brake Light is Lit | X | X | X | X | | | | | | | |
| Transmission in N | X | X | X | X | | | | | | | |
| Tactical Idle in OFF | | | | | X | X | X | X | X | X | X |
| Transmission in D | | | | | X | X | X | X | X | X | X |
| Tank Moving at 10-20 MPH | | | | | X | X | X | X | X | X | X |

## APPENDIX B. CREW DRILLS FOR M60A3 TANK GUNNERY

### Tank Gunnery Crew Drills Training

INTRODUCTION: The key to successful team performance is practice. Consider the top teams in professional sports. They are continuously practicing the basic plays that make them a winner. When they practice, their workouts are taken seriously and they dedicate themselves to improving both individually and as a team. They are willing to pay the price. They accept the hard work and the time it takes to get it right. When game time comes around they are ready. They are confident that they can perform their individual assignments and have acquired the team skills and timing necessary for them to win.

Crew Drills are a set of standardized procedures that a tank crew must perform to be successful on or off the battlefield. In tank gunnery, these crew drills represent the most basic of all possible target engagements. The outcome of these engagements will depend almost entirely on which tank crew can put steel on target the fastest and with the least amount of gunnery error. To be this good demands crew drill practice, and the tank crew that dedicates itself to doing whatever it takes to acquire the individual and team gunnery skills will win.

CHARACTERISTICS: There are 11 crew drills considered fundamental to M60A3 tank gunnery. Each crew drill has a procedures guide which identifies the performance steps all crewmembers must make during each phase of an engagement. It also identifies the more critical gunnery steps that can be observed to check-out individual crewmember performance. These tank gunnery crew drills are designed specifically for open hatch operations during daylight and without the use of live ammunition. More realistic battlefield conditions that can be exercised when dry-firing each crew drill are outlined in Table B-1. Specific equipment conditions that must be established prior to crew drills training are presented in Table B-2.

RESPONSIBILITIES: You, the tank commander, are the primary trainer for crew drills. It is your responsibility to provide each crewmember with the training required to successfully perform each of the engagements. Every opportunity, scheduled and unscheduled, must be seized to train your crew. Platoon leaders/sergeants should be looked to for training assistance. However, it is your tank crew and how well they perform in combat will depend entirely on how well you prepared them during training.

TRAINING APPROACH: To accomplish crew drill training, the following approach is recommended:

1. Introduce the Crew Drill. State the task to be trained and the performance standards specified in FM 17-12-3. Point out the importance of conducting the crew drill, why it is being trained using dry-fire methods, and how it relates to gunnery performance expected on the battlefield.

2. Demonstrate. Talk each crewmember through the tank gunnery procedure using the procedures guide. Show them where their individual performances contribute collectively to the success or failure of the gunnery engagement. Using the asterisked (*) items, show them how a performance step might be included during an engagement.

3. Get Set-up. Instruct your crew to enter the tank. When ready, conduct a prepare-to-fire check. Next, select the battlefield condition to be trained (Table B-1), and set-up the equipment (Table B-2). For the purpose of dry-fire training, tell the loader to leave the breech open for loading a "second" round, and to assume a battlesight condition. Tell the gunner to simulate the actual firing of a live main gun round and to announce a round sensing.

4. Practice. Issue an appropriate fire command to begin the engagement. Proceed gradually, reviewing each crewmember's individual task performance. When an error is noted that can be easily fixed, provide immediate hands-on instruction. Otherwise, notify him of the deficiency and arrange for remedial training. If more timing and coordination is required between two crewmembers, arrange the time to let them practice. Repeat the engagement as often as necessary to meet the crew drill standards.

5. Train For Combat. Increase the difficulty of the task by practicing it under the remaining battlefield conditions identified in Table B-1. Close the hatches, put on protective masks, use manual controls, simulate a three-man crew, and practice what is required when there are weapon system failures.

6. Get Certified. Once your tank crew has mastered a given crew drill across all battlefield conditions, contact your platoon leader or sergeant and ask him to certify your tank's readiness. Have him review your performance and record your progress on Table B-1.

## #1. STATIONARY TANK/STATIONARY TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. ☐ | Maintain Fire Control System. ☐<br>Monitor Commands. | Search For Targets. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Maintain Engine RPMs. ☐<br>Monitor Gages.<br>Monitor Commands. |
| 2. | Issue Fire Command: ☐<br>. GUNNER, SABOT (HEAT), TANK." | *Insure Turret Power Is ON.<br>Insure Announced Ammo Is Indexed.<br>Place MAIN GUN Switch In ON. ☐ | Drop Down Into Turret. ☐<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | Lay Gun For Direction. ☐ | Look Through Telescope. ☐ | Insure Turret Is Unlocked/Clear. | *Release Brakes. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Squeeze Palm Switches. ☐ | *Place Turret BLOWER In ON. ☐ | Shift To L. |
| 5. | Release Palm Switch On TC Override. | Issue Driving Command. ☐ | Insure Path Of Recoil Is Clear. | Drive Tank Forward. ☐ |
| 6. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain.<br>Announce "DRIVER STOP." ☐ | Place SAFETY In FIRE. ☐ | Listen For Driving Command.<br>Stop Tank. ☐ |
| 7. | Listen For "UP." | Look Through TTS. ☐<br>*Adjust Thermal Channel Range Focus.<br>Detect/Recognize Target. | Announce "UP." ☐ | Hold Brakes Depressed.<br>Shift To R. ☐<br>Maintain Engine RPM. ☐ |
| 8. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Remove Hands From T-Bar. |
| 9. | *Close/Lock Hatch. | *Select NAR Field Of View. ☐<br>Lay Slightly Below Center Of Mass. ☐ | Identify Announced Round. | Maintain Engine RPM. |
| 10. | Verify Range Data And GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" or "FIRE." | Unlock Round From Rack.<br>Remove Round. ☐ | Monitor Commands. |
| 11. | *Command "RELASE, AIM (Higher)(Lower)" ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | Monitor Gages. |
| 12. | *Press BATL RNG And RESET Buttons. ☐ | *Adjust Aim And Repeat Step 10. ☐ | | |
| 13. | Command "FIRE." ☐ | Lay On Center Of Visible Mass. ☐ | Listen For "FIRE." | |
| 14. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 15. | Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐ | Brace For Recoil. | Brace For Recoil. |
| 16. | *Announce Sensing/Observation: ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing/Observation. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command |
| 17. | *Issue Subsequent Fire Command: ☐<br>. Command "REENGAGE," Then Steps 18-26.<br>. Command "CEASE FIRE," Then Steps 27-30. | *Respond To TC Command: ☐<br>. Do Steps 18-26.<br>. Do Steps 27-30. | *Respond To TC Command: ☐<br>. Do Steps 18-26.<br>. Do Steps 27-30. | *Respond To TC Command: ☐<br>. Do Steps 18-26.<br>. Do Steps 28-30. |

OVER

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|---|---|---|---|---|
| 18. | Press BATL RNG And RESET Buttons. ☐ | Lay Slightly Below Center Of Mass. ☐<br>*Track Target. | Insure Path Of Recoil Is Clear. ☐<br>*Place SAFETY In FIRE. ☐ | Monitor Commands. |
| 19. | Listen For "UP." | *Listen For "UP." ☐ | Announce "UP." ☐ | |
| 20. | Verify Range Data And GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" and "FIRE." | Identify Announced Round. ☐<br>Unlock Round From Rack.<br>Remove Round. ☐ | Monitor Gages. |
| 21. | *Command "RELASE, AIM (Higher)(Lower)" ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | |
| 22. | *Press BATL RNG And RESET Buttons. ☐ | *Adjust Aim And Repeat Step 20. ☐ | | |
| 23. | Command "FIRE." ☐ | Lay On Center Of Visible Mass. ☐ | *Listen For "FIRE." | |
| 24. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Maintain Engine RPM. ☐ |
| 25. | Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>*Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 26. | Repeat Steps 16-17. | Repeat Steps 16-17. | Repeat Steps 16-17. | Repeat Steps 16-17. |
| 27. | Press BATL RNG And RESET Buttons. ☐ | *Place MAIN GUN Switch In OFF. ☐<br>Update Fire Control System. | Reload/Restow Round. ☐<br>Check Replenisher Tape. ☐ | Prepare To Back Up. |
| 28. | Issue Driving Command: ☐<br>. "DRIVER BACK UP . . . STOP."<br>. "DRIVER BACK UP . . . STOP. TURN RIGHT (LEFT), MOVE TO ALTERNATE POSITION . . . DRIVER STOP." | Monitor Driving Commands: ☐<br>. Look Through Unity Window.<br>. Listen For Driver Alerts.<br>. Brace For Stopping. | Monitor Driving Commands: ☐<br>.*Place Turret BLOWER In OFF.<br>. Listen For Driver Alerts.<br>. Brace For Stopping.<br>.*Resume Target Search. | Follow Driving Command: ☐<br>. Adjust Speed/Direction.<br>. Alert Crew Of Obstacles.<br>. Stop Tank. |
| 29. | *Repeat Steps 1-17. | *Repeat Steps 1-17. | *Repeat Steps 1-17. | *Repeat Steps 1-17. |
| 30. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## #2. STATIONARY TANK/MOVING TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. ☐ | Maintain Fire Control System. ☐<br>Monitor Commands. | Search For Targets. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Maintain Engine RPM. ☐<br>Monitor Gages.<br>Monitor Commands. |
| 2. | Issue Fire Command: ☐<br>. "GUNNER, SABOT (HEAT), MOVING TANK." | *Insure Turret Power Is ON.<br>Insure Announced Ammo Is Indexed.<br>Place MAIN GUN Switch In ON. ☐ | Drop Down Into Turret. ☐<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | Lay Gun For Direction. ☐ | Look Through Telescope. ☐ | Insure Turret Is Unlocked/Clear. | *Release Brakes. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Squeeze Palm Switches. ☐ | *Place Turret BLOWER In ON. ☐ | Shift To L. ☐ |
| 5. | Release Palm Switch On TC Override. | Issue Driving Command. ☐ | Insure Path Of Recoil Is Clear. | Drive Tank Forward. ☐ |
| 6. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain.<br>Announce "DRIVER STOP." ☐ | Place SAFETY In FIRE. ☐ | Listen For Driving Command.<br>Stop Tank. ☐ |
| 7. | Listen For "UP." | Look Through TTS. ☐<br>*Adjust Thermal Channel Range Focus.<br>Detect/Recognize Target. | Announce "UP." ☐ | Hold Brakes Depressed.<br>Shift To R. ☐<br>Maintain Engine RPM. ☐ |
| 8. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Remove Hands From T-Bar. |
| 9. | *Close/Lock Hatch. ☐ | *Select NAR Field Of View. ☐<br>Lay Slightly Below Center Of Mass. ☐<br>Track Target. ☐ | Identify Announced Round. ☐ | Maintain Engine RPM. ☐ |
| 10. | Verify Range Data And GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" or "FIRE." | Unlock Round From Rack.<br>Remove Round. ☐ | Monitor Commands. |
| 11. | *Command "RELASE, AIM (Higher)(Lower)" ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | |
| 12. | *Press BATL RNG And RESET Buttons. ☐ | *Adjust Aim And Repeat Step 10. ☐ | | |
| 13. | Command "FIRE." ☐ | Lay On Center Of Visible Mass. ☐ | Listen For "FIRE." | Monitor Gages. |
| 14. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 15. | Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 16. | *Announce Sensing/Observation: ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing/Observation. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 17. | *Issue Subsequent Fire Command: ☐<br>. Command "REENGAGE," Then Steps 18-26.<br>. Command "CEASE FIRE," Then Steps 27-30. | *Respond To TC Command: ☐<br>. Do Steps 18-26.<br>. Do Steps 27-30. | *Respond To TC Command: ☐<br>. Do Steps 18-26.<br>. Do Steps 27-30. | *Respond To TC Command: ☐<br>. Do Steps 18-26.<br>. Do Steps 27-30. |

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|---|---|---|---|---|
| 18. | Press BATL RNG And RESET Buttons. ☐ | Lay Slightly Below Center Of Mass. ☐<br>*Track Target. ☐ | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | Monitor Commands. |
| 19. | Listen For "UP." | *Listen For "UP." | Announce "UP." ☐ | |
| 20. | Verify Range Data And GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" and "FIRE." | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐ | Monitor Gages. |
| 21. | *Command "RELASE, AIM (Higher)(Lower)." ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | |
| 22. | *Press BATL RNG And RESET Buttons. ☐ | *Adjust Aim And Repeat Step 20. ☐ | | |
| 23. | Command "FIRE." ☐ | Lay On Center Of Visible Mass. ☐ | *Listen For "FIRE." | |
| 24. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Maintain Engine RPM. ☐ |
| 25. | Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>*Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 26. | Repeat Steps 16-17. | Repeat Steps 16-17. | Repeat Steps 16-17. | Repeat Steps 16-17. |
| 27. | Press BATL RNG And RESET Buttons. ☐ | *Place MAIN GUN Switch In OFF. ☐<br>Update Fire Control System. | Reload/Restow Round. ☐<br>Check Replenisher Tape. | Prepare To Back Up. |
| 28. | Issue Driving Commands: ☐<br>. "DRIVER BACK UP . . . STOP."<br>. "DRIVER BACK UP . . . STOP. TURN RIGHT (LEFT). MOVE TO ALTERNATE POSITION . . . DRIVER STOP." | Monitor Driving Commands: ☐<br>. Look Through Unity Window.<br>. Listen For Driver Alerts.<br>. Brace For Stopping. | Monitor Driving Commands: ☐<br>.*Place Turret SLOWER In OFF.<br>. Listen For Driver Alerts.<br>. Brace For Stopping.<br>.*Resume Target Search. | Follow Driving Commands: ☐<br>. Adjust Speed/Direction.<br>. Alert Crew Of Obstacles.<br>. Stop Tank. |
| 29. | *Repeat Steps 1-17. | *Repeat Steps 1-17. | *Repeat Steps 1-17. | *Repeat Steps 1-17. |
| 30. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## #3. STATIONARY TANK/MOVING TARGET TELESCOPE ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. ☐ | Maintain Fire Control System. ☐<br>Monitor Commands. | Search For Targets. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Maintain Engine RPM. ☐<br>Monitor Gages.<br>Monitor Commands. |
| 2. | Issue Fire Command. ☐<br>"GUNNER, SABOT (HEAT), MOVING TANK." | *Insure Turret Power Is ON.<br>Place MAIN GUN Switch In ON. ☐ | Drop Down Into Turret. ☐<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | Lay Gun For Direction. ☐ | Look Through Telescope. ☐<br>Insure Announced Reticle Is In Telescope. | Insure Turret Is Unlocked/Clear. | *Release Brakes. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Squeeze Palm Switches. ☐ | *Place Turret BLOWER In ON. ☐ | Shift To L. |
| 5. | Release Palm Switch On TC Override. | Issue Driving Command. ☐ | Insure Path Of Recoil Is Clear. | Drive Tank Forward. ☐ |
| 6. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain.<br>Announce "DRIVER STOP." ☐ | Place SAFETY In FIRE. ☐ | Listen For Driving Command.<br>Stop Tank. ☐ |
| 7. | Listen For "UP." | Detect/Recognize Target. | Announce "UP." ☐ | Hold Brakes Depressed.<br>Shift To R. ☐ |
| 8. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Remove Hands From T-Bar. |
| 9. | Estimate/Announce Range. ☐ | Track Target. ☐<br>Identify Announced Rangeline. | Identify Announced Round.<br>Unlock Round From Rack. | Maintain Engine RPM. ☐ |
| 10. | *Close/Lock Hatch. | Lay Announced Rangeline On Center Of Visible Mass. ☐<br>Apply Standard Lead. ☐<br>Listen For "FIRE." | Remove Round. ☐ | Monitor Gages. |
| 11. | Command "FIRE." ☐ | Make Final Precise Lay. ☐ | Listen For "FIRE." | Monitor Commands. |
| 12. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 13. | Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 14. | *Announce Sensing/Observation. ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing/Observation. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 15. | *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Steps 16-19.<br>. Let Gunner Adjust Fire, Then Steps 16-19.<br>. Command "CEASE FIRE," Then Steps 22-24. | *Respond To TC Command: ☐<br>. Apply Corrections, Then Steps 16-19.<br>. Fire Adjust, Then Steps 16-19.<br>. Do Steps 20-24. | *Respond To TC Command: ☐<br>. Do Steps 16-19.<br>. Do Steps 16-19.<br>. Do Steps 20-24. | *Respond To TC Command: ☐<br>. Do Steps 16-19.<br>. Do Steps 16-19.<br>. Do Steps 22-24. |
| 16. | Listen For "UP." | Listen For "UP."<br>*Track Target. ☐<br>Make Final Precise Lay. ☐ | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐<br>Announce "UP." ☐ | *Monitor Gages. |

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|---|---|---|---|---|
| 17. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐<br>Listen For "ON THE WAY." | Maintain Engine RPM. ☐ |
| 18. | Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>*Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 19. | Repeat Steps 14-15. | Repeat Steps 14-15. | Repeat Steps 14-15. | Repeat Steps 14-15. |
| 20. | | *Place MAIN GUN Switch In OFF. ☐ | Reload/Restow Round. ☐ | Prepare To Back Up. |
| 21. | | Update Fire Control System. | Check Replenisher Tape. ☐ | |
| 22. | Issue Driving Commands: ☐<br>. "DRIVER BACK UP . . . STOP."<br>. "DRIVER BACK UP . . . STOP. TURN RIGHT (LEFT). MOVE TO ALTERNATE POSITION . . . DRIVER STOP." | Monitor Driving Commands: ☐<br>. Look Through Unity Window.<br>. Listen For Driver Alerts.<br>. Brace For Stopping. | Monitor Driving Commands: ☐<br>.*Place Turret BLOWER In OFF.<br>. Listen For Driver Alerts.<br>. Brace For Stopping. | Follow Driving Commands: ☐<br>. Adjust Speed/Direction.<br>. Alert Crew Of Obstacles.<br>. Stop Tank. |
| 23. | *Repeat Steps 1-15. | *Repeat Steps 1-15. | *Repeat Steps 1-15. | *Repeat Steps 1-15. |
| 24. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## #4. STATIONARY TANK/SIMULTANEOUS TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. ☐ | Maintain Fire Control System. ☐<br>Monitor Commands. | Search For Targets. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Maintain Engine RPM. ☐<br>Monitor Gages.<br>Monitor Commands. |
| 2. | Issue Fire Command: ☐<br>. "GUNNER, SABOT (HEAT), MOVING TANK." | *Insure Turret Power Is ON.<br>Insure Announced Ammo Is Indexed.<br>Place MAIN GUN Switch In ON. ☐ | Drop Down Into Turret. ☐<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | Lay Gun For Direction. ☐ | Look Through Telescope. ☐ | Insure Turret Is Unlocked/Clear. | *Release Brakes. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Squeeze Palm Switches. ☐ | *Place Turret BLOWER In ON. ☐ | Shift To L. |
| 5. | Release Palm Switch ON TC Override. | Issue Driving Command. ☐ | Insure Path Of Recoil Is Clear. | Drive Tank Forward. ☐ |
| 6. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain.<br>Announce "DRIVER STOP." ☐ | Place SAFETY In FIRE. ☐ | Listen For Driving Command.<br>Stop Tank. ☐ |
| 7. | Listen For "UP." | Look Through TTS. ☐<br>*Adjust Thermal Channel Range Focus.<br>Detect/Recognize Target. | Announce "UP." ☐ | Hold Brakes Depressed.<br>Shift To R. ☐<br>Maintain Engine RPM. ☐ |
| 8. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Remove Hands From T-Bar. |
| 9. | Place CUPOLA POWER Switch In ON. ☐ | *Select NAR Field Of View. ☐<br>Lay Slightly Below Center Of Mass. ☐ | Identify Announced Round.<br>Unlock Round From Rack. | Maintain Engine RPM. ☐ |
| 10. | Place GUN SAFETY Switch In ON. ☐ | Track Target. ☐ | Remove Round. ☐ | Monitor Commands. |
| 11. | Place LAST ROUND OVERRIDE Switch In OFF. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐ | | |
| 12. | Verify Range Data And GO Light. ☐ | Listen For "RELASE" or "FIRE." | | Monitor Gages. |
| 13. | *Command "RELASE, AIM (Higher)(Lower)" ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | |
| 14. | *Press BATL RNG And RESET Buttons. ☐ | *Adjust Aim And Repeat Steps 10-12. ☐ | | |
| 15. | Command "FIRE AND ADJUST, CAL .50." ☐ | Lay On Center Of Visible Mass. ☐ | Listen For "FIRE." | |
| 16. | Estimate Range And Lay On Center Of Visible Mass. ☐ | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 17. | Fire 10-15 Round Burst And Sense Tracer Impact. ☐ | Squeeze Firing Trigger. ☐<br>Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 18. | *Announce Sensing/Observation. ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing/Observation. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC/Gunner Commands. | Listen For Driving Command. |

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| 19. | Take Command Actions:<br>. Adjust Fire, Then Steps 18 and 19.<br>. Announce "TC COMPLETE," Then Steps 21-30. | Take Command Actions:<br>. Do Steps 21-30.<br>. Announce "CEASE FIRE," Then Steps 31-34. | Respond To Gunner Commands:<br>. Do Steps 21-30.<br>. Do Steps 31-34. | Respond To Gunner Commands:<br>. Do Steps 21-30.<br>. Do Steps 31-34. |
| 20. | *Issue Subsequent Fire Command:<br>. Command "REENGAGE," Then Steps 21-30.<br>. Command "CEASE FIRE," Then Steps 31-34. | Respond To TC Command:<br>. Do Steps 21-30.<br>. Do Steps 31-34. | Respond To TC Commands:<br>. Do Steps 21-30.<br>. Do Steps 31-34. | Respond To TC Commands:<br>. Do Steps 21-30.<br>. Do Steps 31-34. |
| 21. | Press BATL RNG And RESET Buttons. | Lay Slightly Below Center Of Mass.<br>*Track Target. | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. | Monitor Commands. |
| 22. | Place CUPOLA POWER Switch In OFF. | Listen For "UP." | Announce "UP." | Monitor Gages. |
| 23. | Place GUN SAFETY Switch In OFF. | Announce "LASING."<br>Press Lase/Lead Button. | Identify Announced Round. | |
| 24. | Verify Range Data And GO Light. | Listen For "RELASE" or "FIRE." | Unlock Round.<br>Remove Round. | Monitor Engine RPM. |
| 25. | *Command "RELASE, AIM (Higher)(Lower)" | *Release/Squeeze Palm Switches. | *Listen For "RELASE." | |
| 26. | *Press BATL RNG And RESET Buttons. | *Adjust Aim And Repeat Steps 23-24. | | |
| 27. | Command "FIRE." | Lay On Center Of Visible Mass. | *Listen For "FIRE." | |
| 28. | Listen For "ON THE WAY." | Announce "ON THE WAY." | Listen For "ON THE WAY." | |
| 29. | Attempt To Sense. | Squeeze Firing Trigger(s).<br>*Continue To Track. | Brace For Recoil. | Brace For Recoil. |
| 30. | Repeat Steps 18 and 20. | Repeat Steps 18 and 20. | Repeat Steps 18 and 20. | Repeat Steps 18 and 20. |
| 31. | Press BATL RNG And RESET Buttons. | *Place MAIN GUN Switch In OFF.<br>Update Fire Control System. | Reload/Restow Round.<br>Check Replenisher Tape. | Prepare To Back Up. |
| 32. | Issue Driving Commands:<br>. "DRIVER BACK UP . . . STOP."<br>. "DRIVER BACK UP . . . STOP. TURN RIGHT (LEFT). MOVE TO ALTERNATE POSITION . . . DRIVER STOP." | Monitor Driving Command:<br>. View Through Unity Window.<br>. Listen For Driver Alerts.<br>. Brace For Stopping. | Monitor Driving Command:<br>.*Place Turret BLOWER In OFF.<br>. Listen For Driving Alerts.<br>. Brace For Stopping.<br>.*Resume Target Search. | Follow Driving Commagd:<br>. Adjust Speed/Direction.<br>. Alert Crew Of Obstacles.<br>. Stop Tank. |
| 33. | *Repeat Steps 1-20. | *Repeat Steps 1-20. | *Repeat Steps 1-20. | *Repeat Steps 1-20. |
| 34. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## #5. STATIONARY TANK/MOVING MULTIPLE TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. ☐ | Maintain Fire Control System. ☐<br>Monitor Commands. | Search For Target. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Maintain Engine RPMs. ☐<br>Monitor Gages.<br>Monitor Commands |
| 2. | Issue Fire Command: ☐<br>. "GUNNER, SABOT (HEAT), TWO (THREE) MOVING TANKS, RIGHT (LEFT, CENTER) TANK." | *Insure Turret Power Is ON.<br>Insure Announced Ammo Is Indexed.<br>Place MAIN GUN Switch In ON. ☐ | Drop Down Into Turret. ☐<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | Lay Gun For Direction. ☐ | Look Through Telescope. ☐ | Insure Turret Is Unlocked/Clear. | *Release Brakes. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Squeeze Palm Switches. ☐ | *Place Turret Blower In ON. ☐ | Shift To L. |
| 5. | Release Palm Switch On TC Override. | Issue Driving Commands. ☐ | Insure Path of Recoil Is Clear. | Drive Tank Forward. ☐ |
| 6. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain.<br>Announce "DRIVER STOP." ☐ | Place SAFETY In FIRE. ☐ | Listen For Driving Command.<br>Stop Tank. ☐ |
| 7. | Listen For "UP." | Look Through TTS. ☐<br>*Adjust Thermal Channel Range Focus.<br>Detect/Recognize Target. | Announce "UP." ☐ | Hold Brakes Depressed.<br>Shift To R. ☐<br>Maintain Engine RPM. ☐ |
| 8. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Remove Hands From T-Bar. |
| 9. | *Close/Lock Hatch. | *Select NAR Field Of View. ☐<br>Lay Slightly Below Center of Mass. ☐ | Identify Announced Round.<br>Unlock Round From Rack. | Maintain Engine RPM. ☐ |
| 10. | Verify Range Data And GO Light. ☐ | Track Target. ☐<br>Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" or "FIRE." | Remove Round. ☐ | Monitor Commands. |
| 11. | *Command "RELASE, AIM (Higher)(Lower)" ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | |
| 12. | *Press BATL RNG And RESET Buttons. ☐ | *Adjust Aim And Repeat Step 10. ☐ | | |
| 13. | Command "FIRE." ☐ | Lay On Center Of Visible Mass. ☐ | Listen For "FIRE." | Monitor Gages. |
| 14. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 15. | Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 16. | *Announce Sensing/Observation: ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing/Observation. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |

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| 17. *Issue Subsequent Fire Command:<br>. Command "REENGAGE," Then Steps 18-27.<br>. Command "(NEXT TARGET)," Then Steps 18-27.<br>Command "CEASE FIRE," Then Steps 28-31. | ☐ | *Respond To TC Command:<br>. Do Steps 18-27.<br>. Do Steps 18-27.<br>. Do Steps 28-31. | ☐ | *Respond To TC Command:<br>. Do Steps 18-27.<br>. Do Steps 18-27.<br>. Do Steps 28-31. | ☐ | *Respond To TC Command:<br>. Do Steps 18-27.<br>. Do Steps 18-27.<br>. Do Steps 28-31. | ☐ |
| 18. Press BATL RNG And RESET Buttons. | ☐ | Release/Squeeze Palm Switches.<br>Detect/Recognize Target. | ☐ | Insure Path of Recoil Is Clear.<br>Place SAFETY In FIRE. | ☐ | Monitor Commands. | |
| 19. *Listen For "IDENTIFIED." | | Announce "IDENTIFIED" | ☐ | *Listen For "IDENTIFIED." | | | |
| 20. Listen For "UP." | | Lay Slightly Below Center Of Mass.<br>*Listen For "UP." | ☐ | Announce "UP."<br>Identify Announced Round. | ☐ | Monitor Gages. | |
| 21. Verify Range Data and GO Light. | ☐ | Track Target.<br>Announce "LASING."<br>Press Lase/Lead Button.<br>Listen For "RELASE" and "FIRE." | ☐<br>☐<br>☐ | Unlock Round From Rack.<br>Remove Round. | ☐ | Maintain Engine RPM. | ☐ |
| 22. *Command "RELASE, AIM [Higher][Lower]" | ☐ | *Release/Squeeze Palm Switches. | ☐ | *Listen For "RELASE." | | | |
| 23. *Press BATL RNG And RESET Buttons. | ☐ | *Adjust Aim And Repeat Step 21. | ☐ | | | | |
| 24. Command "FIRE." | ☐ | Lay On Center Of Visible Mass. | ☐ | *Listen For "FIRE." | | | |
| 25. Listen For "ON THE WAY." | | Announce "ON THE WAY." | ☐ | | | | |
| 26. Attempt To Sense. | ☐ | Squeeze Firing Trigger(s).<br>Continue To Track. | ☐<br>☐ | Brace For Recoil. | | Brace For Recoil. | |
| 27. Repeat Steps 16-17. | | Repeat Steps 16-17. | | Repeat Steps 16-17. | | Repeat Steps 16-17. | |
| 28. Press BATL RNG And RESET Buttons. | ☐ | *Place MAIN GUN Switch In OFF.<br>Update Fire Control System. | ☐ | Reload/Restow Round.<br>Check Replenisher Tape. | ☐<br>☐ | Prepare To Back Up. | |
| 29. Issue Driving Command:<br>. "DRIVER BACK UP . . . STOP.<br>. "DRIVER BACK UP . . . STOP. TURN RIGHT (LEFT), MOVE TO ALTERNATE POSITION . . . DRIVER STOP." | ☐ | Monitor Driving Commands:<br>. Look Through Unity Window.<br>. Listen For Driver Alerts.<br>. Brace For Stopping | ☐ | Monitor Driving Commands:<br>.*Place Turret BLOWER In OFF.<br>. Listen For Driver Alerts.<br>. Brace For Stopping.<br>.*Resume Target Search. | ☐ | Follow Driving Command:<br>. Adjust Speed/Direction.<br>. Alert Crew Of Obstacles.<br>. Stop Tank. | ☐ |
| 30. *Repeat Steps 1-17. | | *Repeat Steps 1-17. | | *Repeat Steps 1-17. | | *Repeat Steps 1-17. | |
| 31. Acknowledge Crew Reports. | | Report Firing Status. | | Report Loading Status. | | Report Driving Status. | |

## #6. MOVING TANK/STATIONARY TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. ☐ | Search For Targets. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target. ☐<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. | Issue Fire Command: ☐<br>. "GUNNER, SABOT (HEAT), TANK" | Insure Announced Ammo Is Indexed.<br>Insure STAB Is ON. | Drop Down Into Turret. ☐<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | *Direct Driver Toward Target. ☐ | Place MAIN GUN Switch In ON. ☐ | Insure Turret Is Unlocked/Clear.<br>*Place Turret BLOWER In ON. ☐ | Follow Driving Command. ☐<br>Detect/Recognize Target. |
| 4. | Lay Gun for Direction. ☐ | Look Through TTS. ☐<br>*Adjust Thermal Channel Range Focus. | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | *Steer Toward Target. ☐ |
| 5. | Listen For "UP." | Detect/Recognize Target. | Announce "UP." ☐ | Search For Hull-Down. |
| 6. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Command. |
| 7. | Release Override. ☐ | Squeeze Palm Switches. ☐<br>*Select NAR Field Of View. ☐<br>Listen For Driver Alerts. | Identify Announced Round.<br>Listen For Driver Alerts. | *Continue Search For Hull-Down.<br>Alert Crew Of Obstacles. ☐ |
| 8. | *Close/Lock Hatch. | Lay Slightly Below Center Of Mass. ☐<br>*Track Target. ☐ | Unlock Round From Rack. | Monitor Gages. |
| 9. | Verify Range Data And GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" or "FIRE." | Remove Round. ☐ | Monitor Commands. |
| 10. | *Command "RELASE, AIM (Higher)(Lower)" ☐ | Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | Establish Steady Speed/ Direction. ☐ |
| 11. | *Press UATL RNG And RESET Buttons. ☐ | *Adjust Aim, And Repeat Step 9. ☐ | | |
| 12. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | |
| 13. | Listen For "ON THE WAY." | Lay On Center Of Visible Mass. ☐<br>Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Maintain Steady Speed/ Direction. ☐ |
| 14. | Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>Continue To Track. ☐ | Brace For Recoil. | *Attempt To Sense. |
| 15. | *Announce Sensing/Observation. ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing/Observation. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | *Round Sense.<br>Listen For Driving Command. |
| 16. | *Issue Subsequent Fire Command: ☐ | *Respond To TC Command: ☐ | *Respond To TC Command: ☐ | *Respond To TC Command: ☐ |
| | . Command "DRIVER STOP . . . REENGAGE," Then Steps 17-25. | . Do Steps 17-25. | . Do Steps 17-25. | . Stop Tank, Then Do Steps 15-16. |
| | . Command "REENGAGE," Then Steps 17-25. | . Do Steps 17-25. | . Do Steps 17-25. | . Do Steps 17-25. |
| | . Command "CEASE FIRE," Then Steps 26-29. | . Do Steps 26-29. | Do Steps 26-29. | . Do Steps 26-29. |

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| 17. | Press BATL RNG And RESET Buttons. ☐ | Lay Slightly Below Center Of Mass. ☐<br>*Track Target. ☐ | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | Continue Search For Hull-Down.<br>Monitor Commands. |
| 18. | Listen For "UP." | Listen For "UP."<br>Listen For Driver Alerts. | Announce "UP." ☐<br>Listen For Driver Alerts. | Alert Crew Of Obstacles. ☐ |
| 19. | Verify Range Data And GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" and "FIRE." | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐ | Maintain Steady Speed/ Direction. ☐ |
| 20. | *Command "RELASE, AIM (Higher)(Lower)" ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | |
| 21. | *Press BATL RNG And RESET Buttons. ☐ | *Adjust Aim, And Repeat Step 19. ☐ | | |
| 22. | Command "FIRE." ☐ | Lay On Center Of Visible Mass. ☐ | *Listen For "FIRE." | |
| 23. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 24. | Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>*Continue To Track. ☐ | Brace For Recoil. | *Attempt To Sense. |
| 25. | Repeat Steps 15-16. | Repeat Steps 15-16. | Repeat Steps 15-16. | Repeat Steps 15-16. |
| 26. | Press BATL RNG And RESET Buttons. ☐ | *Place MAIN GUN Switch In OFF. ☐<br>Update Fire Control System. | Reload/Restow Round. ☐<br>Check Replenisher Tape. ☐ | Prepare To Change Driving Mode. |
| 27. | Issue Driving Commands: ☐<br>. "DRIVER SEEK HULL-DOWN."<br>. "DRIVER MOVE OUT."<br>. "DRIVER STEER LEFT (RIGHT, STRAIGHT AHEAD)."<br>. "DRIVER STOP." | Monitor Driving Commands: ☐<br>. Look Through Unity Window.<br>. Listen For Driver Alerts.<br>. Brace For Stopping. | Monitor Driving Commands: ☐<br>.*Place Turret BLOWER In OFF.<br>. Listen For Driver Alerts.<br>. Brace For Stopping.<br>.*Resume Target Search. | Follow Driving Command: ☐<br>. Adjust Speed/Direction.<br>. Alert Crew Of Obstacles.<br>. Stop Tank. |
| 28. | *Repeat Steps 1-16. | *Repeat Steps 1-16. | *Repeat Steps 1-16. | *Repeat Steps 1-16. |
| 29. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## #7. MOVING TANK/BATTLESIGHT TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|
| Acquire/Identify Target. ☐ | Search For Targets. ☐ | Search For Targets. ☐ | Search For Target. ☐ |
| | *Acquire/Identify Target. | *Acquire/Identify Target. | *Acquire/Identify Target. |
| | *Report Target. | *Report Target. | *Report Target. |
| 2. Issue Fire Command. ☐ | Insure Announced Ammo Is Indexed. | Drop Down Into Turret. ☐ | Listen For Driving Command. |
| "GUNNER, BATTLESIGHT, MOVING TANK." | Insure STAB Is ON. | *Close/Lock Hatch. | |
| 3. *Direct Driver Toward Target. ☐ | Place MAIN GUN Switch In ON. ☐ | Insure Turret Is Clear. | Follow Driving Command. ☐ |
| | | *Place Turret BLOWER In ON. ☐ | Detect/Recognize Target. |
| 4. Lay Gun For Direction. ☐ | Look Through TTS. ☐ | Insure Path Of Recoil Is Clear. | *Steer Toward Target. ☐ |
| | *Adjust Thermal Channel Range Focus. | Place SAFETY In FIRE. ☐ | |
| 5. Listen For "UP." | Detect/Recognize Target. | Announce "UP." ☐ | Search For Hull-Down. |
| 6. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Commands. |
| 7. Release Override. ☐ | Squeeze Palm Switches. ☐ | Identify Battlesight Round. | *Continue Search For Hull-Down. |
| | *Select NAR Field Of View. ☐ | | |
| | Listen For Driver Alerts. | Listen For Driver Alerts. | Alert Crew Of Obstacles. ☐ |
| 8. *Close/Lock Hatch. | Lay On Center Of Visible Mass. ☐ | Unlock Round From Rack. | Establish Steady Speed/ Direction. ☐ |
| 9. *Look Through Rangefinder. | Track Target. ☐ | Remove Round. ☐ | Monitor Commands. |
| | Press (Lase)/Lead Button. ☐ | | |
| 10. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Gages. |
| 11. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | Maintain Steady Speed/ Direction. ☐ |
| | Make Final Precise Lay. | | |
| 12. *Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐ | Brace For Recoil. | *Attempt To Sense. |
| | Continue To Track. ☐ | | |
| 13. *Announce Sensing/Observation. ☐ | Relay On Target Aiming Point. ☐ | Insure SAFETY In SAFE. | *Round Sense. |
| | Announce Sensing/Observation. ☐ | Load Round. ☐ | Listen For Driving Command. |
| | Listen For TC Command. | Listen For TC Command. | |
| 14. *Issue Subsequent Fire Command: ☐ | *Respond To TC Command: ☐ | *Respond To TC Command: ☐ | *Respond To TC Command: ☐ |
| . Command "DRIVER STOP . . . ," "GUNNER, Then Steps 15-18. | . Do Steps 15-18. | . Do Steps 15-18. | . Stop Tank, Then Do Steps 15-18. |
| . Fire Adjust, Then Steps 15-18. | . Apply Corrections, Then Steps 15-18. | . Do Steps 15-18. | . Do Steps 15-18. |
| . Let Gunner Adjust Fire, Then Steps 15-18. | . Fire Adjust, Then Steps 15-18. | . Do Steps 15-18. | . Do Steps 15-18. |
| . Command "CEASE FIRE," Then Steps 21-23. | . Do Steps 19-23. | . Do Steps 19-23. | . Do Steps 19-23. |
| 15. Listen For "UP." | Track Target. ☐ | Insure Path Of Recoil Is Clear. | Continue Search For Hull-Down. |
| | Press (Lase)/Lead Button. ☐ | Place SAFETY In FIRE. ☐ | Monitor Commands. |
| | Listen For "UP." | Announce "UP." ☐ | Alert Crew Of Obstacles. ☐ |
| | Listen For Driver Alerts. | Listen For Driver Alerts. | |

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| 16. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Precise Lay. | Identify Battlesight Round.<br>Unlock Round From Rack.<br>Remove Round. ☐<br>Listen For "ON THE WAY." | Maintain Steady Speed/ Direction. ☐ |
| 17. | Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>*Continue To Track. ☐ | Brace For Recoil. | *Attempt To Sense. |
| 18. | Repeat Steps 13-14. | Repeat Steps 13-14. | Repeat Steps 13-14. | Repeat Steps 13-14. |
| 19. | | *Place MAIN GUN Switch In OFF. ☐ | *Reload/Restow Round.* ☐ | Prepare To Change Driving Mode. |
| 20. | | Update Fire Control System. | Check Replenisher Tape. ☐ | |
| 21. | Issue Driving Commands: ☐<br>. "DRIVER SEEK HULL-DOWN."<br>. "DRIVER MOVE OUT."<br>. "DRIVER STEER LEFT (RIGHT, STRAIGHT AHEAD)."<br>. "DRIVER STOP." | Monitor Driving Commands: ☐<br>. Look Through Unity Window.<br>. Listen For Driver Alerts.<br>. Brace For Stopping. | Monitor Driving Commands: ☐<br>.*Place Turret BLOWER In OFF.<br>. Listen For Driver Alerts.<br>. Brace For Stopping.<br>.*Resume Target Search. | Follow Driving Commands: ☐<br>. Adjust Speed/Direction.<br>. Alert Crew Of Obstacles.<br>. Stop Tank. |
| 22. | *Repeat Steps 1-14. | *Repeat Steps 1-14. | *Repeat Steps 1-14. | *Repeat Steps 1-14. |
| 23. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## #8. MOVING TANK/COAX TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|
| 1. Acquire/Identify Target. ☐ | Search For Targets. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target. ☐<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. Issue Fire Command: ☐<br>. "GUNNER, COAX, TROOPS." | Press HEP/WP Button.<br>Insure STAB is ON.<br>Insure MAIN GUN Switch is OFF. | *Drop Down Into Turret. ☐<br>*Close/Lock Hatch.<br>Insure Turret Is Clear. | Listen For Driving Command. |
| 3. *Direct Driver Toward Target. ☐ | Place MACHINEGUN Switch In ON. ☐<br>Look Through TTS. ☐ | *Place Turret BLOWER In ON. ☐<br>Insure Coax Is Loaded/Charged. | Follow Driving Command. ☐<br>Detect/Recognize Target. |
| 4. Lay Gun For Direction. ☐ | *Adjust Thermal Channel Range Focus. | Place Machinegun SAFETY In F. ☐ | *Steer Toward Target. ☐ |
| 5. Listen For "UP." | Detect/Recognize Target. | Announce "UP." ☐ | Search For Hull-Down Positions. |
| 6. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Commands. |
| 7. Release Override. ☐ | Squeeze Palm Switches. ☐<br>*Select NAR Field Of View. ☐<br>Listen For Driver Alerts. | Listen For Driver Alerts. | *Continue Search For Hull-Down Positions.<br>Alert Crew Of Obstacles. ☐ |
| 8. *Close/Lock Hatch. | Lay On Center Of Target Area. ☐<br>*Track Target. ☐ | Monitor Coax/Ammo Belt. ☐ | Monitor Gages. |
| 9. Verify Range Data and GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" or "FIRE." | | Monitor Commands. |
| 10. *Announce "RELASE, AIM [higher][lower]" ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | |
| 11. *Press BATL RNG And RESET Buttons. ☐ | Adjust Aim And Repeat Step 9. ☐ | | |
| 12. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | *Maintain Steady Speed/Direction. ☐ |
| 13. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 14. Observe Tracer Impact. ☐ | Fire 25-30 Round Burst Using Z Pattern. ☐<br>*Continue To Track. ☐ | Observe Tracer Impact. ☐ | *Observe Tracer Impact. |
| 15. *Announce Sensing/Observation. ☐ | *Announce Sensing/Observation. ☐<br>Listen For TC Command. | *Round Sense.<br>Listen For TC Command. | *Round Sense.<br>Listen For TC Command. |
| 16. *Issue Subsequent Fire Command: ☐<br>. Command: "BRING IT UP (DOWN), LEFT (RIGHT)," Then Steps 13-16.<br>. Command "CEASE FIRE," Then Steps 17-20. | Respond To TC Command: ☐<br>. Apply Corrections, Then Steps 13-16.<br>. Do Steps 17-20. | Respond To TC Command: ☐<br>. Do Steps 13-16.<br>. Do Steps 17-20. | Respond To TC Command<br>. Do Steps 13-16.<br>. Do Steps 17-20. |
| 17. Press BATL RNG And RESET Buttons. ☐ | Place MACHINEGUN Switch In OFF. ☐<br>Press SABOT (HEAT) Button. | Place SAFETY In S. ☐<br>*Remove/Reload Coax Ammo. | Maintain Steady Speed/Direction. ☐ |
| 18. Issue Driving Commands: ☐<br>. "DRIVE HULL-DOWN."<br>. "DRIVE STEER LEFT (RIGHT), SPEED AS REQ."<br>. "DRIVE STOP." | Monitor Driving Commands:<br>. View Through Unity Window.<br>. Listen For Driver Alerts.<br>. Brace For Stopping. | Monitor Driving Commands: ☐<br>. *Place Turret BLOWER In OFF.<br>. Listen For Driver Alerts.<br>. Brace For Stopping.<br>. *Resume Target Search. | Follow Driving Commands ☐<br>. Adjust Speed/Direction<br>. Alert Crew Of Obstacles.<br>. Stop Tank. |
| 19. *Repeat Steps 1-18. | *Repeat Steps 1-18. | *Repeat Steps 1-18. | *Repeat Steps 1-18. |
| 20. Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## #9. MOVING TANK/MOVING TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|
| 1. Acquire/Identify Target. ☐ | Search For Targets. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target. ☐<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. Issue Fire Command. ☐<br>. "GUNNER, SABOT (HEAT), MOVING TANK." | Insure Announced Ammo Is Indexed.<br>Insure STAB Is ON. | Drop Down Into Turret. ☐<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. *Direct Driver Toward Target. ☐ | Place MAIN GUN Switch In ON. ☐ | Insure Turret Is Clear.<br>Place Turret BLOWER In ON. ☐ | Follow Driving Command. ☐<br>Detect/Recognize Target. |
| 4. Lay Gun For Direction. ☐ | Look Through TTS. ☐<br>*Adjust Thermal Channel Range Focus. | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | *Steer Toward Target. ☐ |
| 5. Listen For "UP." | Detect/Recognize Target. | Announce "UP." ☐ | Search For Hull-Down Positions. |
| 6. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Command. |
| 7. Release Override. ☐ | Squeeze Palm Switches. ☐<br>*Select NAR Field Of View. ☐<br>Listen For Driver Alerts. | Identify Announced Round.<br>Listen For Driver Alerts. | *Continue Search For Hull-Down.<br>Alert Crew Of Obstacles. ☐ |
| 8. *Close/Lock Hatch. | Lay Slightly Below Center Of Mass. ☐<br>*Track Target. ☐ | Unlock Round From Rack. | Establish Steady Speed/ Direction. ☐ |
| 9. Verify Range Data And GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" or "FIRE." | Remove Round. ☐ | Monitor Commands. |
| 10. *Command "RELASE, AIM (Higher)(Lower)" ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | |
| 11. *Press GATL RNG And RESET Buttons. ☐ | *Adjust Aim and Repeat Step 9. ☐ | | |
| 12. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Gages. |
| 13. Listen For "ON THE WAY." | Lay On Center Of Visible Mass. ☐<br>Announce "ON THE WAY." ☐ | Listen For "ON THE WAY. | Maintain Steady Speed/ Direction. ☐ |
| 14. Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>Continue Tracking. ☐ | Brace For Recoil. | *Attempt To Sense. |
| 15. *Announce Sensing/Observation. ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing/Observation. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | *Round Sense.<br>Listen For TC Command. |
| 16. *Issue Subsequent Fire Command: ☐<br>. Command "REENGAGE." Then Steps 17-25.<br>. Command "DRIVER STOP . . . REENGAGE," Then steps 17-25.<br>. Command "CEASE FIRE," Then Steps 26-29. | *Respond To TC Command. ☐<br>. Do Steps 17-25.<br>. Do Steps 17-25.<br>. Do Steps 26-29. | *Respond To TC Command: ☐<br>. Do Steps 17-25.<br>. Do Steps 17-25.<br>. Do Steps 26-29. | *Respond To TC Command: ☐<br>. Do Steps 17-25.<br>. Stop Tank, Then Do Steps 15 and 16.<br>. Do Steps 26-29. |

OVER

(Cont)

| | | | | |
|---|---|---|---|---|
| 17. Press BATL RNG And RESET Buttons. ☐ | Lay Slightly Below Center Of Mass. ☐<br>*Track Target. ☐ | Insure Path Of Recoil Is Clear.<br>Place Safety In FIRE. ☐ | Continue Search For Hull-Down.<br>Monitor Commands. |
| 18. Listen For "UP." | Listen For "UP."<br>Listen For Driver Alerts. | Announce "UP." ☐<br>Listen For Driver Alerts. | Alert Crew Of Obstacles. ☐ |
| 19. Verify Range Data And GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" and "FIRE." | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐ | Maintain Steady Speed/ Direction. ☐ |
| 20. *Command "RELASE, AIM (Higher)(Lower)" ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | |
| 21. *Press BATL RNG And RESET Buttons. ☐ | *Adjust Aim And Repeat Step 19. ☐ | | |
| 22. Command "FIRE." ☐ | Lay On Center Of Visible Mass. ☐ | *Listen For "FIRE." | Monitor Gages. |
| 23. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 24. Attempt To Sense. ☐ | Squeeze Firing Trigger(s). ☐<br>*Continue To Track. ☐ | Brace For Recoil. | *Attempt To Sense. |
| 25. Repeat Steps 15-16. | Repeat Steps 15-16. | Repeat Steps 15-16. | Repeat Steps 15-16. |
| 26. Press BATL RNG And RESET Buttons. ☐ | *Place MAIN GUN Switch In OFF. ☐<br>Update Fire Control System. | Reload/Restow Round. ☐<br>Check Replenisher Tape. ☐ | Prepare To Change Driving Mode. |
| 27. Issue Driving Commands: ☐<br>. "DRIVER SEEK HULL-DOWN."<br>. "DRIVER MOVE OUT."<br>. "DRIVER STEER LEFT (RIGHT, STRAIGHT AHEAD)."<br>. "DRIVER STOP." | Monitor Driving Commands: ☐<br>. Look Through Unity Window.<br>. Listen For Driver Alerts.<br>. Brace For Stopping. | Monitor Driving Commands: ☐<br>.*Place Turret BLOWER In OFF.<br>. Listen For Driver Alerts.<br>. Brace For Stopping.<br>.*Resume Target Search. | Follow Driving Commands: ☐<br>. Adjust Speed/Direction.<br>. Alert Crew Of Obstacles.<br>. Stop Tank. |
| 28. *Repeat Steps 1-16. | *Repeat Steps 1-16. | *Repeat Steps 1-16. | *Repeat Steps 1-16. |
| 29. Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## #10. RANGE CARD ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Receive Platoon Leader Fire Command. | *Search For Target. ☐<br>*Acquire/Identify Target.<br>*Report Target. | Listen For Fire Command. | Listen For Fire Command |
| 2. | Command: "GUNNER, HEP, AREA FIRE." ☐ | *Insure Turret Power Is ON.<br>Place MAIN GUN Switch In ON. ☐ | Insure Turret Is Unlocked/Clear.<br>*Place Turret BLOWER In ON. ☐ | Start Engine. ☐<br>Insure Brakes Are Locked. |
| 3. | *Obtain/Review Range Card. | Insure HEP/WP Is Indexed ☐ | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | Remove Hands From T-Bar.<br>Maintain Engine RPM. ☐ |
| 4. | Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Monitor Gages. |
| 5. | Announce "DEFLECTION _____." ☐ | Grasp Manual Traverse Handle. ☐<br>Traverse To Announced Deflection. ☐<br>Release Handle. | Identify HEP Round. | Monitor Commands |
| 6. | Verify Deflection Readback. | Repeat "DEFLECTION _____." ☐ | Unlock HEP From Rack. ☐ | |
| 7. | Announce Range. ☐ | Grasp Range Wheel. ☐<br>Set Announced Range. ☐<br>Check Mil Counter.<br>Release Wheel. | Remove HEP. ☐ | Maintain Engine RPM. ☐ |
| 8. | Verify Range Readback. | Repeat "RANGE _____." ☐<br>Grasp Manual Elevation Control. ☐ | | |
| 9. | Announce "QUADRANT _____." ☐ | Index Announced Elevation On Quadrant. ☐<br>Center Bubble On Elevation Quadrant. ☐ | | |
| 10. | Verify Quadrant Readback. | Repeat "QUADRANT _____." ☐ | | Monitor Gages. |
| 11. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | |
| 12. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 13. | Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger. ☐ | Brace For Recoil. | Brace For Recoil. |
| 14. | Monitor Fire Adjustment. ☐ | Check Deflection.<br>Add 1 Mil. ☐<br>Center Bubble. ☐ | Insure SAFETY In SAFE.<br>Load HEP. ☐<br>Insure Path Of Recoil Is Clear. | Monitor Commands. |
| 15. | Listen For "UP." | Listen For "UP." | Place SAFETY In FIRE. ☐<br>Announce "UP." ☐ | Maintain Engine RPM. ☐ |
| 16. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Identify HEP.<br>Unlock HEP From Rack. ☐<br>Remove HEP. ☐<br>Listen For "ON THE WAY." | Monitor Gages. |
| 17. | Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger. ☐ | Brace For Recoil. | Brace For Recoil. |

OVER

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 18. | Monitor Fire Adjustment. ☐ | Check Deflection. | | Insure SAFETY In SAFE. | | Monitor Commands. | |
| | | Drop 2 MILS. | ☐ | Load HEP. | ☐ | | |
| | | Center Bubble. | ☐ | Insure Path Of Recoil Is Clear. | | | |
| 19. | Repeat Steps 15-17. | Repeat Steps 15-17. | ☐ | Repeat Steps 15-17. | ☐ | Repeat Steps 15-17. | ☐ |
| 20. | Monitor Fire Adjustment. ☐ | Add 1 MIL. | ☐ | Insure SAFETY In SAFE. | | Monitor Commands. | |
| | | Traverse RIGHT 50 MILS. | ☐ | Load HEP. | ☐ | | |
| | | Center Bubble. | ☐ | Insure Path Of Recoil Is Clear. | | | |
| 21. | Repeat Steps 15-17. | Repeat Steps 15-17. | ☐ | Repeat Steps 15-17. | ☐ | Repeat Steps 15-17. | ☐ |
| 22. | Monitor Fire Adjustment. ☐ | Traverse LEFT 100 MILS. | ☐ | Insure SAFETY In SAFE. | | Monitor Commands. | |
| | | Center Bubble. | ☐ | Load HEP. | ☐ | | |
| | | | | Insure Path Of Recoil Is Clear. | | | |
| 23. | Repeat Steps 15-17. | Repeat Steps 15-17. | ☐ | Repeat Steps 15-17. | ☐ | Repeat Steps 15-17. | ☐ |
| 24. | Command "CEASE FIRE." ☐ | Place MAIN GUN Switch In OFF. | ☐ | Insure SAFETY In SAFE. | | *Release Brakes. | |
| | | | | Reload/Restow HEP. | ☐ | | |
| | | | | *Place Turret BLOWER In OFF. | ☐ | | |
| 25. | Return Gun To Primary Target. ☐ | Follow TC Commands. | ☐ | Check Replenisher Tape. | ☐ | Listen For Driving Command. | |
| | | Resume Target Search. | | Remove Spent Casings. | | | |
| 26. | Acknowledge Crew Reports. | Report Firing Status. | | Report Loading Status. | | Report Firing Status. | |

## #11. RANGE CARD LAY TO DIRECT FIRE TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Receive Platoon Leader Fire Command. | *Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Listen For Fire Command. | Listen For Fire Command. |
| 2. | Command "GUNNER DIRECT FIRE, INDEX HEP, FIRE (Ammo)." ☐ | *Insure Turret Power Is ON.<br>Place MAIN GUN Switch In ON. ☐<br>Insure HEP/WP Is Indexed. | Insure Turret Is Unlocked/Clear.<br>Insure SAFETY In SAFE. | *Start Engine. ☐ |
| 3. | *Obtain/Review Range Card. | Look Through Periscope. | Open Breech Manually. ☐ | Insure Brakes Are Depressed. |
| 4. | Announce "(Target)." ☐ | Make Mental Note Of Target. | Remove HEP Round. ☐ | Remove Hands From T-Bar. |
| 5. | Announce "DEFLECTION _____." ☐ | Grasp Manual Traverse Handle. ☐<br>Traverse To Announced Deflection. ☐<br>Release Handle. | Stow HEP In Rack. ☐ | Maintain Engine RPM. ☐ |
| 6. | Verify Deflection Readback. | Repeat "DEFLECTION _____." ☐ | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐ | Monitor Commands. |
| 7. | Announce Range. ☐ | Grasp Range Wheel. ☐<br>Set Announced Range. ☐<br>Check Mil Counter.<br>Release Wheel. | Load Round. ☐ | |
| 8. | Verify Range Readback. | Repeat "RANGE _____." ☐ | Identify Announced Round. | Monitor Gages. |
| 9. | Announce "QUADRANT _____." ☐ | Grasp Manual Elevation Control. ☐<br>Index Announced Elevation On Quadrant. ☐<br>Center Bubble. ☐<br>Release Control. | Unlock Round From Rack.<br>Remove Round. ☐ | |
| 10. | Verify Quadrant Readback. | Repeat "QUADRANT _____." ☐ | Insure Path Of Recoil Is Clear. | |
| 11. | Listen For "(Ammo) INDEXED." | Announce "(Ammo) INDEXED." ☐<br>Place MANUAL/RANGEFINDER Switch In RANGEFINDER. ☐ | Listen For "IDENTIFIED." | |
| 12. | *Look Through Rangefinder. | Look Through Periscope. ☐ | *Place Turret BLOWER In ON. ☐ | Monitor Commands. |
| 13. | Acquire/Identify Target When Illuminated. ☐ | Detect/Recognize Target. | | |
| 14. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐<br>Squeeze Palm Switches. ☐ | Place SAFETY In FIRE. ☐ | Maintain Engine RPM. ☐ |
| 15. | Listen For "UP." | Lay Slightly Below Center of Mass. ☐<br>*Track Target. ☐<br>Listen For "UP." | Announce "UP." ☐ | Monitor Gages. |
| 16. | Verify Range Data And GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" or "FIRE." | | |
| 17. | *Command "RELASE, AIM (Higher)(Lower)" ☐ | *Release/Squeeze Palm Switches. ☐ | *Listen For "RELASE." | |

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| | | | | |
|---|---|---|---|---|
| 18. *Press BATL RNG And RESET buttons. ☐ | *Adjust Aim And Repeat Step 16. ☐ | | | |
| 19. Command "FIRE." ☐ | Listen For "FIRE." | | Listen For "FIRE." | |
| 20. Listen For "ON THE WAY." | Lay On Center Of Visible Mass. ☐<br>Announce "ON THE WAY." ☐ | | Listen For "ON THE WAY." | |
| 21. Attempt To Sense While Protecting Night Vision From Blast. ☐ | Squeeze Firing Trigger(s). ☐<br>Protect Night Vision. ☐<br>*Continue To Track. ☐ | | Brace For Recoil. | Brace For Recoil.<br>*Protect Night Vision. ☐ |
| 22. *Announce Sensing/Observation. ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing/Observation. ☐<br>Listen For TC Command. | | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 23. *Issue Subsequent Fire Command: ☐<br>. Command "REENGAGE," Then Steps 24-32.<br>. Command "CEASE FIRE," Then Steps 33-36. | *Respond To TC Command: ☐<br>. Do Steps 24-32.<br>. Do Steps 33-36. | | *Respond To TC Command: ☐<br>. Do Steps 24-32.<br>. Do Steps 33-36. | *Respond To TC Command: ☐<br>. Do Steps 24-32.<br>. Do Steps 33-36. |
| 24. Press BATL RNG And RESET Buttons. ☐ | Lay Slightly Below Center Of Mass. ☐<br>*Track Target. ☐ | | Insure Path Of Recoil Is Clear.<br>Place SAFETY In "FIRE." ☐ | Monitor Commands. |
| 25. Listen For "UP." | Listen For "UP." | | Announce "UP." ☐ | Maintain Engine RPM. ☐ |
| 26. Verify Range Data And GO Light. ☐ | Announce "LASING." ☐<br>Press Lase/Lead Button. ☐<br>Listen For "RELASE" and "FIRE." | | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐ | |
| 27. *Command "RELASE, AIM (Higher)(Lower)" ☐ | *Release/Squeeze Palm Switches. ☐ | | *Listen For "RELASE." | |
| 28. *Press BATL RNG And RESET Buttons. ☐ | *Adjust Aim And Repeat Step 16. ☐ | | | |
| 29. Command "FIRE." ☐ | Lay On Center Of Visible Mass. ☐ | | Listen For "FIRE." | Monitor Gages. |
| 30. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | | Listen For "ON THE WAY." | |
| 31. Attempt To Sense While Protecting Night Vision From Blast. ☐ | Squeeze Firing Trigger(s). ☐<br>Protect Night Vision. ☐<br>*Continue To Track. ☐ | | Brace For Recoil. | Brace For Recoil.<br>*Protect Night Vision. ☐ |
| 32. Repeat Steps 22-23. | Repeat Steps 22-23. | | Repeat Steps 22-23. | Repeat Steps 22-23. |
| 33. Press BATL RNG And RESET Buttons. ☐<br>☐ | *Place MAIN GUN Switch In OFF. ☐<br>Update Fire Control System. | | Reload/Restow Round. ☐<br>Check Replenisher Tape. ☐ | Prepare To Back Up. |
| 34. Issue Driving Commands: ☐<br>. "DRIVER BACK UP . . . STOP."<br>. "DRIVER BACK UP . . . STOP. TURN RIGHT (LEFT). MOVE TO ALTERNATE POSITION . . . DRIVER STOP." | Monitor Driving Commands: ☐<br>. View Through Unity Window.<br>. Listen For Driver Alerts.<br>. Brace For Stopping. | | *Monitor Driving Commands: ☐<br>.*Place Turret BLOWER In OFF.<br>. Listen For Driver Alerts.<br>. Brace For Stopping.<br>.*Resume Target Search. | Follow Driving Commands: ☐<br>. Adjust Speed/Direction.<br>. Alert Crew Of Obstacles.<br>. Stop Tank. |
| 35. *Repeat Steps 1-23. | *Repeat Steps 1-23. | | *Repeat Steps 1-23. | *Repeat Steps 1-23. |
| 36. Acknowledge Crew Reports. | Report Firing Status. | | Report Loading Status. | Report Driving Status. |

# Table B-1

CREW DRILL TARGET ENGAGEMENT REQUIREMENTS

FOR M60A3 TANK CREWS

| CREW DRILLS | OPEN HATCH | | CLOSED HATCH | | OPEN HATCH WITHOUT MASK | | CLOSED HATCH WITH MASK | | WEAPON SYSTEM FAILURES | | | | | 3 MAN CREW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | NIGHT | DAY | NIGHT | DAY | NIGHT | DAY | NIGHT | COMPUTER | RANGE-FINDER | LEAD | TURRET POWER | STAB SYSTEM | |
| 1. Single - Main Gun<br>Stationary vs. Stationary<br>GNR - TTS - Precision | | | | | | | | | | | X | | X | |
| 2. Single - Main Gun<br>Stationary vs. Moving<br>GNR - TTS - Precision | | | | | | | | | | | | | X | |
| 3. Single - Main Gun<br>Stationary vs. Moving<br>GNR - Telescope - Precision | | | | | | | | | X | | X | | X | X |
| 4. Simultaneous - Main Gun/Cal .50<br>Stationary vs. Mov/Stationary<br>TTS/PER - Pre/Suppress | | | | | | | | | | | | | X | X |
| 5. Multiple - Main Gun<br>Stationary vs. Moving<br>GNR - TTS - Precision | | | | | | | | | | | | | X | |
| 6. Single - Main Gun<br>Moving vs. Stationary<br>GNR - TTS - Precision | | | | | | | | | | | | X | | |
| 7. Single - Main Gun<br>Moving vs. Stationary<br>GNR - TTS - Battlesight | | | | | | | | | | | | X | | |
| 8. Single - Coax Machinegun<br>Moving vs. Stationary<br>GNR - TTS - Precision | | | | | | | | | | | | X | | |
| 9. Single - Main Gun<br>Moving vs. Moving<br>GNR - TTS - Precision | | | | | | | | | | | | X | | |
| 10. Single - Main Gun<br>Stationary vs. Stationary<br>GNR - Auxiliary - Range Card | X | | X | | X | | X | | | | X | | X | |
| 11. Single - Main Gun<br>Stationary vs. Moving<br>GNR - Range Card To Direct Fire | X | | X | | X | | X | | | | | | X | |

NOTE: For each Crew Drill accomplished, record the date on which training began and ended. Make certain the last date entered is initialed by the platoon leader/sergeant for certification.

## Table B-2

M60A3 EQUIPMENT CONDITIONS BY CREW DRILL

| TC STATION | CREW DRILL 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CUPOLA POWER Switch In OFF | X | X | X | X | X | X | X | X | X | X | X |
| Cal .50 Rate-Of-Fire Selector In L Or H | X | X | X | X | X | X | X | X | X | X | X |
| TTS GUNNER/CMDR Switch In GUNNER | X | X | X | X | X | X | X | X | X | X | X |
| APDS Switch/Indicator Lit | X | X | X | X | X | X | X | X | X | - | - |
| *MODE Switch In AUTO And Lit | X | X | - | X | X | X | X | X | X | - | X |
| BATL RNG Switch/Indicator Lit | X | X | - | X | X | X | - | X | X | - | X |
| RESET Switch/Indicator Lit | X | X | - | X | X | X | - | X | X | - | X |
| LAST Switch/Indicator Lit | X | X | - | X | X | X | - | X | X | - | X |
| STATIONARY Indicator Lit | X | X | X | X | X | - | - | - | - | X | X |
| STAB ELECTRONICS Indicator Lit | - | - | - | - | - | X | X | X | X | - | - |
| MOVING Indicator Lit | - | - | - | - | - | X | X | X | X | - | - |
| HEP/WP Switch/Indicator Lit | - | - | - | - | - | - | - | - | - | X | X |
| LAST ROUND OVERRIDE In ON | - | - | - | X | - | - | - | - | - | - | - |
| Cal .50 Machinegun Safety In F | - | - | - | X | - | - | - | - | - | - | - |
| Cal .50 Loaded/Charged | - | - | - | X | - | - | - | - | - | - | - |
| Cupola AZIMUTH LOCK Handle Down | - | - | - | X | - | - | - | - | - | - | - |
| GUN SAFETY Switch In OFF | - | - | - | X | - | - | - | - | - | - | - |

| GUNNER STATION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ELEV/TRAV POWER Switch In ON | X | X | X | X | X | X | X | X | X | X | X |
| MAIN GUN Switch In OFF | X | X | X | X | X | X | X | X | X | X | X |
| MACHINEGUN Switch In OFF | X | X | X | X | X | X | X | X | X | X | X |
| POWER Switch For Stabilization In ON | X | X | X | X | X | X | X | X | X | X | X |
| LRF Ballistic Cover Open | X | X | - | X | X | X | - | X | X | - | X |
| TTS Ballistic Shield Cover Open | X | X | - | X | X | X | - | X | X | - | X |
| THERMAL CHANNEL Field Of View In WIDE | X | X | - | X | X | X | - | X | X | - | - |
| TTS MODE Switch In STBY | X | X | - | X | X | X | X | X | X | - | X |
| APDS Switch/Indicator Lit | X | X | - | X | X | X | X | X | X | - | - |
| POWER Switch On Control Unit In ON | X | X | - | X | X | X | - | X | X | - | X |
| MANUAL/RANGEFINDER Switch In RANGEFINDER | X | X | - | X | X | X | - | X | X | - | - |
| MOVING/STATIONARY Switch In STATIONARY | X | X | - | X | X | - | - | - | - | X | X |
| MOVING/STATIONARY Switch In MOVING | - | - | - | - | - | X | X | X | X | - | - |
| STAB Switch For Stabilization In ON | - | - | - | - | - | X | X | X | X | - | - |
| MANUAL/RANGEFINDER Switch In MANUAL | - | - | - | - | - | - | X | - | - | X | X |
| HEP/WP Switch/Indicator Lit | - | - | - | - | - | - | - | - | - | X | X |
| APDS Reticle Positioned In 105D | - | - | X | - | - | - | - | - | - | - | - |

| LOADER STATION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Main Gun Safety In SAFE | X | X | X | X | X | X | X | X | X | X | X |
| Turret Lock In UNLOCKED | X | X | X | X | X | X | X | X | X | X | X |
| Turret BLOWER In OFF | X | X | X | X | X | X | X | X | X | X | X |
| Coax Machinegun Safety In S | X | X | X | X | X | X | X | X | X | X | X |
| Main Gun Breech Open (Simulated Loaded) | X | X | X | X | X | X | X | - | X | X | X |
| Stabilization ON Light Lit | X | X | X | X | X | - | - | - | - | X | X |
| Coax Machinegun Loaded/Charged | - | - | - | - | - | - | - | X | - | - | - |

| DRIVER STATION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Transmission In N Or P | X | X | X | X | X | - | - | - | - | X | X |
| Engine Idling At 1000-1200 RPM | X | X | X | X | X | - | - | - | - | X | X |
| Brakes Are Locked | X | X | X | X | X | - | - | - | - | X | X |
| Transmission In L Or H | - | - | - | - | - | X | X | X | X | - | - |
| Tank Moving At 10-20 MPH | - | - | - | - | - | X | X | X | X | - | - |

*If an Eye-Safe Laser Rangefinder is NOT available, MODE Switch must be in TEST position.

## APPENDIX C. CREW DRILLS FOR M60A1(AOS) TANK GUNNERY

### TANK GUNNERY CREW DRILLS TRAINING

INTRODUCTION: The key to successful team performance is practice. For example, the top teams in professional sports are those that continuously practice the basic things that make them successful. When they work out, their practice sessions are serious and dedicated to being the best both individually and as a team. They're willing to pay the price so they accept the hard work and the time it takes to get it right. When game time comes around they're ready. They not only know their individual assignments, but they have acquired the team skills and timing necessary to win.

The tank gunnery crew drills are the basic things that your tank crew must practice to be successful in combat. They are the gunnery engagement procedures that your tank crew will most likely perform on the next battlefield and must execute perfectly to win and survive. When the flag drops your tank crew will have to out-maneuver and outshoot an enemy superior in number and capable of blowing you away. If your tank crew hesitates in putting steel on target immediately, almost automatically, they will not survive. To be ready for combat you and your A1 tank crew must be totally committed to going the whole nine yards. Under your leadership, they must be willing to practice until everyone has acquired both the individual and team gunnery skills to win.

There is no other answer!

CHARACTERISTICS: There are 13 crew drills considered fundamental to M60A1 (AOS) gunnery. Each crew drill has a procedures guide which identifies the performance steps crewmembers must make during each phase of an engagement. It also identifies the more critical gunnery steps that can be observed to checkout individual crewmember performance. These tank gunnery crew drills are designed specifically for open hatch operations during daylight and without the use of live ammunition. More realistic battlefield conditions that can be exercised when dry-firing each crew drill are outlined in Table C-1. Specific equipment conditions that must be established prior to crew drills training are presented in Table C-2.

RESPONSIBILITIES: You, the tank commander, are the primary trainer for crew drills. It is your responsibility to provide each crewmember with the training required to successfully perform each of the engagements. Every opportunity, scheduled and unscheduled, must be seized to train your crew. Platoon leaders/ sergeants should be looked to for training assistance. However, it is your tank crew and how well they perform in combat will depend entirely on how well you prepared them during training.

TRAINING APPROACH: To accomplish crew drill training, the following approach is recommended:

1. Introduce the Crew Drill. State the task to be trained and the performance standards specified in FM 17-12-2. Point out the importance of conducting the crew drill, why it is being trained using dry-fire methods, and how it relates to gunnery performance expected on the battlefield.

2. Demonstrate. Talk each crewmember through the tank gunnery procedure using the procedures guide. Show them where their individual performances contribute collectively to the success or failure of the gunnery engagement. Using the asterisked (*) items, show them how a performance step might be included during an engagement.

3. Get Set-up. Instruct your crew to enter the tank. When ready, conduct a prepare-to-fire check. Next, select the battlefield condition to be trained (Table C-1), and set-up the equipment (Table C-2). For the purpose of dry-fire training, tell the loader to leave the breech open for loading a "second" round, and to assume a battlesight condition. Tell the gunner to simulate the actual firing of a live main gun round and to announce a round sensing.

4. Practice. Issue an appropriate fire command to begin the engagement. Proceed gradually, reviewing each crewmember's individual task performance. When an error is noted that can be easily fixed, provide immediate hands-on instruction. Otherwise, notify him of the deficiency and arrange for remedial training. If more timing and coordination is required between two crewmembers, arrange the time to let them practice. Repeat the engagement as often as necessary to meet the crew drill standards.

5. Train For Combat. Increase the difficulty of the task by practicing it under the remaining battlefield conditions identified in Table C-1. Close the hatches, put on protective masks, use manual controls, simulate a three-man crew, and practice what is required when there are weapon system failures.

6. Get Certified. Once your tank crew has mastered a given crew drill across all battlefield conditions, contact your platoon leader or sergeant and ask him to certify your tank's readiness. Have him review your performance and record your progress on Table C-1.

## STATIONARY TANK/STATIONARY TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Maintain Fire Control System.<br>Monitor Commands. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Maintain Ergine RPM.<br>Monitor Gages.<br>Monitor Commands. |
| 2. | Issue Fire Command ☐ | Insure Turret Power Is ON.<br>Insure Announced Ammo Is Indexed.<br>Place MAIN GUN Switch In ON. ☐ | Drop Down Into Turret.<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | Lay Gun For Direction. ☐ | Look Through Telescope. | Insure Turret Is Unlocked/Clear.<br>*Place Turret Blower In ON. | *Release Brakes. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Issue Driving Command. ☐ | Insure Path Of Recoil Is Clear. | Shift To L. ☐<br>Drive Tank Forward. ☐ |
| 5. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain. ☐<br>Announce "DRIVER STOP." ☐ | Place SAFETY In FIRE. ☐ | Listen For Driving Command.<br>Stop Tank. |
| 6. | Listen For "UP." | Look Through Periscope.<br>Detect/Recognize Target.<br>Listen For "UP." | Announce "UP." ☐ | Hold Brakes Depressed.<br>Shift To R. ☐ |
| 7. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Remove Hands From T-Bar. ☐ |
| 8. | Release Override | Squeeze Palm Switches | Identify Announced Round. | Maintain Engine RPMs. |
| 9. | *Close/Lock Hatch. | Lay On Target Center Of Mass. ☐ | | |
| 10. | Look Through Rangefinder | Listen For "FIRE." | Unlock Round From Rack. | Monitor Commands. |
| 11. | Range To Target. ☐ | | Remove Round. ☐ | |
| 12. | Command "FIRE." ☐ | | Listen for "FIRE." | Monitor Gages. |
| 13. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen for "ON THE WAY." | |
| 14. | Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐ | Brace For Recoil. | Brace For Recoil. |
| 15. | *Announce Sensing. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 16. | *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Steps 17-20.<br>. Let Gunner Adjust Fire, Then Steps 17-20.<br>. Command "CEASE FIRE." Then Steps 22-23. | *Respond To TC Command: ☐<br>. Apply Corrections, Then Steps 17-20.<br>. Fire Adjust, Then Steps 17-20.<br>. Do Steps 21-23. | *Respond To TC Command: ☐<br>. Do Steps 17-20.<br>. Do Steps 17-20.<br>. Do Steps 21-23. | *Respond To TC Command: ☐<br>. Do Steps 17-20.<br>. Do Steps 17-20.<br>. Do Steps 21-23. |

| | | | | |
|---|---|---|---|---|
| 17. | Listen For "UP." | Listen For "UP." | Insure Path Of Recoil Is Clear. | Monitor Commands. |
| | | *Track Target. ☐ | Place SAFETY In FIRE. ☐ | Monitor Gages. |
| | | *Apply Lead. ☐ | Announce "UP." ☐ | |
| 18. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Identify Announced Round. | Maintain Engine RPM. ☐ |
| | | Make Final Lay. | Unlock Round From Rack. | |
| | | | Remove Round. ☐ | |
| | | | Listen For "ON THE WAY." | |
| 19. | Brace For Recoil. | Pause 1 Second. | Brace For Recoil. | Brace For Recoil. |
| | | Squeeze Firing Trigger(s). ☐ | | |
| | | *Continue To Track. | | |
| 20. | Announce Sensing. ☐ | Relay On Target Aiming Point. ☐ | Insure SAFETY In SAFE. | Listen For Driving Command. |
| | | Announce Sensing. ☐ | Load Round. ☐ | |
| | | Listen For TC Command. | Listen For TC Command. | |
| 21. | Issue Subsequent Fire Command: | Respond To TC Command: | Respond To TC Command: | Respond To TC Command: |
| | . Command "CEASE FIRE." ☐ | . Place MAIN GUN Switch In OFF. ☐ | .*Place Turret Blower In OFF. | . Prepare To Drive Rearward. ☐ |
| | | | . Reload/Restow Ammo. | |
| 22. | Move To Turret-Down Or Alternate Firing Position. ☐ | Update Fire Control System. ☐ | Check Replenisher Tape. ☐ | Follow Driving Commands. ☐ |
| | | | Remove Spent Casings. | |
| | | | Resume Target Search. | |
| 23. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |
| | | | Resume Target Search. | |

## STATIONARY TANK/MOVING TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Maintain Fire Control System<br>Monitor Commands. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Maintain Engine RPM.<br>Monitor Gages.<br>Monitor Commands. |
| 2. | Issue Fire Command. ☐ | Insure Turret Power Is ON.<br>Insure Announced Ammo Is Indexed.<br>Place MAIN GUN Switch In ON. ☐ | Drop Down Into Turret.<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | Lay Gun For Direction. ☐ | Look Through Telescope. | Insure Turret Is Unlocked/Clear.<br>*Place Turret Blower In ON. | *Release Brakes. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Issue Driving Command. ☐ | Insure Path Of Recoil Is Clear. | Shift To L. ☐<br>Drive Tank Forward. ☐ |
| 5. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain. ☐<br>Announce "DRIVER STOP." ☐ | Place SAFETY In FIRE. ☐ | Listen For Driving Command.<br>Stop Tank. |
| 6. | Listen For "UP." | Look Through Periscope.<br>Detect/Recognize Target.<br>Listen For "UP." | Announce "UP." ☐ | Hold Brakes Depressed.<br>Shift To R. ☐ |
| 7. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Remove Hands From T-Bar. ☐ |
| 8. | Release Override | Squeeze Palm Switches | Identify Announced Round. | Maintain Engine RPMs. |
| 9. | *Close/Lock Hatch. | Lay On Target Center Of Mass. ☐ | | |
| 10. | Look Through Rangefinder. | Track Target. ☐ | Unlock Round From Rack. | Monitor Commands. |
| 11. | Range To Target. ☐ | *Apply Lead. ☐ | Remove Round. ☐ | |
| 12. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Gages. |
| 13. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "OK THE WAY." | |
| 14. | Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>Continue Tracking. | Brace For Recoil. | Brace For Recoil |
| 15. | *Announce Sensing. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For [illegible] | Insure SAFETY In SAFE.<br>Load Round. ☐ | Listen For Driving Command. |
| 16. | *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Steps 17-20.<br>. Let Gunner Adjust Fire, Then Steps 17-20.<br>. Command "CEASE FIRE," Then Steps 22-23. | *Respond To TC Command: ☐<br>. Apply Corrections, Then Steps 17-20.<br>. Fire Adjust, Then Steps 17-20.<br>. Do Steps 21-23. | *Respond To TC Command: ☐<br>. Do Steps 17-20.<br>. Do Steps 17-20.<br>. Do Steps 21-23. | *Respond To TC Command: ☐<br>. Do Steps 17-20.<br>. Do Steps 17-20.<br>. Do Steps 21-23. |

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|---|---|---|---|---|
| 17. | Listen For "UP." | Listen For "UP." | Insure Path Of Recoil Is Clear. | Monitor Commands. |
| | | *Track Target. ☐ | Place SAFETY In FIRE. ☐ | Monitor Gages. |
| | | *Apply Lead. ☐ | Announce "UP." ☐ | |
| 18. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Identify Announced Round. | Maintain Engine RPM . ☐ |
| | | Make Final Lay. | Unlock Round From Rack. | |
| | | | Remove Round. ☐ | |
| | | | Listen For "ON THE WAY." | |
| 19. | Brace For Recoil. | Pause 1 Second. | Brace For Recoil. | Brace For Recoil. |
| | | Squeeze Firing Trigger(s). ☐ | | |
| | | *Continue To Track. | | |
| 20. | Announce Sensing. ☐ | Relay On Target Aiming Point. ☐ | Insure SAFETY In SAFE. | Listen For Driving Command. |
| | | Announce Sensing ☐ | Load Round. ☐ | |
| | | Listen For TC Command. | Listen For TC Command. | |
| 21. | Issue Subsequent Fire Command: | Respond To TC Command: | Respond To TC Command: | Respond To TC Command: |
| | . Command "CEASE FIRE." ☐ | . Place MAIN GUN Switch In OFF. ☐ | .*Place Turret Blower In OFF. | . Prepare To Drive Rearward. |
| | | | .*Reload/Restow Ammo | |
| 22. | Move To Turret Down OR Alternate Firing Position. ☐ | Update Fire Control System. ☐ | Check Replenisher Tape. ☐ | Follow Driving Commands. ☐ |
| | | | Remove Spent Casings. | |
| | | | Resume Target Search. | |
| 23. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## STATIONARY TANK/TELESCOPE ENGAGEMENT DRILL

PROCEDURES GUIDE

| TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|
| 1. Acquire/Identify Target. | Maintain Fire Control System.<br>Monitor Commands. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Maintain Engine RPM.<br>Monitor Gages.<br>Monitor Commands. |
| 2. Issue Fire Command. ☐ | Insure Turret Power Is ON.<br>Place MAIN GUN Switch In ON. ☐ | Drop Down Into Turret.<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. Lay Gun For Direction. ☐ | Look Through Telescope.<br>Insure Announced Reticle Is In Telescope. | Insure Turret Is Unlocked/Clear.<br>*Place Turret Blower In ON. | *Release Brakes |
| 4. Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Issue Driving Command. | Insure Path Of Recoil Is Clear | Shift To L. ☐<br>Drive Tank Forward. ☐ |
| 5. Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain.<br>Announce "DRIVER STOP." | Place SAFETY In FIRE. ☐ | Listen For Driving Command.<br>Stop Tank. |
| 6. Listen For "UP." | Detect/Recognize Target.<br>Listen For "UP." | Announce "UP." ☐ | Hold Brakes Depressed.<br>Shift To R ☐ |
| 7. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Remove Hands From T-Bar. ☐ |
| 8. Release Override. ☐ | Squeeze Palm Switches. ☐ | Identify Announced Round. | Maintain Engine RPMs. |
| 9. *Close/Lock Hatch. | Lay Center Of Reticle On Target Center Of Mass. ☐ | | |
| 10. Look Through Rangefinder | Track Target. ☐ | Unlock Round From Rack. | Monitor Commands. |
| 11. Range To Target. ☐ | *Apply Lead. ☐<br>Listen For Range. | Remove Round. ☐ | |
| 12. Announce Range. ☐ | Lay Announced Range On Center Of Mass. ☐ | | Monitor Gages. |
| 13. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | |
| 14. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | |
| 15. Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>Continue Tracking. ☐ | Brace For Recoil. | Brace For Recoil. |
| 16. *Announce Sensing. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 17. *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Steps 18-21.<br>. Let Gunner Adjust Fire, Then Steps 18-21.<br>. Command "CEASE FIRE," Then Steps 22-24. | *Respond To TC Command: ☐<br>. Apply Corrections, Then Steps 18-21.<br>. Fire Adjust, Then Steps 18-21.<br>. Do Steps 22-24. | *Respond To TC Command: ☐<br>. Do Steps 18-21.<br>. Do Steps 18-21.<br>. Do Steps 22-24. | *Respond To TC Command: ☐<br>. Do Steps 18-21.<br>. Do Steps 18-21.<br>. Do Steps 22-24. |

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|---|---|---|---|---|
| 18. | Listen For "UP." | Listen For "UP." | Insure Path Of Recoil Is Clear. | Monitor Gages. |
| | | *Track Target. ☐ | Place SAFETY In FIRE. | |
| | | *Apply Lead. ☐ | Announce "UP." | |
| 19. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Identify Announced Round. | Maintain Engine RPM . |
| | | Make Final Lay. | Unlock Round From Rack. | |
| | | | Remove Round. | |
| | | | Listen For "ON THE WAY." | |
| 20. | Brace For Recoil. | Pause 1 Second. | Brace For Recoil. | Brace For Recoil. |
| | | Squeeze Firing Trigger(s). ☐ | | |
| | | *Continue To Track. | | |
| 21. | Announce Sensing. ☐ | Relay On Target Aiming Point. ☐ | Insure SAFETY In SAFE. | Listen For Driving Command. |
| | | Announce Sensing. ☐ | Load Round. | |
| | | Listen For TC Command. | Listen For TC Command. | |
| 22. | Issue Subsequent Fire Command: | Respond To TC Command: | Respond To TC Command: | Respond To TC Command: |
| | Command "CEASE FIRE." ☐ | . Place MAIN GUN Switch In OFF. ☐ | .*Place Turret Blower In OFF. | . Prepare To Drive Rearward. ☐ |
| | | | . Reload/Restow Ammo. | |
| 23. | Move To Turret-Down OR Alternate Firing Position. ☐ | Update Fire Control System. ☐ | Check Replenisher Tape. ☐ | Follow Driving Commands. ☐ |
| | | | Remove Spent Casings. | |
| | | | Resume Target Search. | |
| 24. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## STATIONARY TANK/SIMULTANEOUS TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|
| 1. Acquire/Identify Target. | Maintain Fire Control System.<br>Monitor Commands. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Maintain Engine RPM.<br>Monitor Gages.<br>Monitor Commands. |
| 2. Issue Fire Command. ☐ | Insure Turret Power Is ON.<br>Insure Announced Ammo Is Indexed.<br>Place MAIN GUN Switch In ON. ☐ | Drop Down Into Turret.<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. Lay Gun For Direction. ☐ | Look Through Telescope. | Insure Turret Is Unlocked/Clear.<br>*Place Turret Blower In ON. | *Release Brakes. |
| 4. Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Issue Driving Command. ☐ | Insure Path Of Recoil Is Clear. | Shift To L. ☐<br>Drive Tank Forward. ☐ |
| 5. Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain. ☐<br>Announce "DRIVER STOP." ☐ | Place SAFETY In FIRE. ☐ | Listen For Driving Command.<br>Stop Tank. |
| 6. Listen For "UP." | Look Through Periscope.<br>Detect/Recognize Target<br>Listen For "UP." | Announce "UP." ☐ | Hold Brakes Depressed.<br>Shift To R. ☐ |
| 7. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Remove Hands From T-Bar. ☐ |
| 8. Release Override | Squeeze Palm Switches | Identify Announced Round. | Maintain Engine RPMs. |
| 9. *Close/Lock Hatch. | Lay On Target Center Of Mass. ☐ | | |
| 10. Look Through Rangefinder At Target. | Apply Lead. ☐ | Unlock Round From Rack. | Monitor Commands. |
| 11. Range To Target. ☐ | Track Target. ☐ | Remove Round. ☐ | |
| 12. Command "FIRE AND ADJUST CALIBER FIFTY." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Gages. |
| 13. *Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | |
| 14. *Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>Continue To Track. | Brace For Recoil. | Brace For Recoil. |
| 15. Insure Cal .50 Gun Safety in F. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For "TC COMPLETE." | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC/Gunner Commands. | Listen For Driving Command. |
| 16. Place Gun Electrical Safety Switch in ON. ☐ | Take Command Actions: ☐<br>. Fire Adjust, Then Steps 18-22.<br>. Announce "CEASE FIRE," Then Step 17, 23-26. | Respond To TC/Gunner Commands: ☐<br>. Do Steps 18-22.<br>. Do Steps 17, 23-26. | Respond To TC/Gunner Commands ☐<br>. Do Steps 18-22.<br>. Do Steps 17, 23-26. |

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|---|---|---|---|---|
| 17. *Hold Electrical Power Control Switch To ON. ☐ | Place MAIN GUN Switch In OFF. ☐<br>Assist TC In Fire Adjustment. ☐<br>Listen For "TC COMPLETE." | Assist TC/Cal .50 Operation. ☐<br>Listen For "TC COMPLETE." | Monitor Commands. |
| 18. Estimate Range. | Listen For "UP."<br>*Apply Lead. ☐ | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐<br>Announce "UP." ☐ | Monitor Commands.<br>Monitor Gages. |
| 19. Lay Cal .50 On Target. ☐ | Announce "ON THE WAY." ☐<br>Make Final Lay. | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐<br>Listen For "ON THE WAY." | Maintain Engine RPM . ☐ |
| 20. Fire 10-15 Round Burst. ☐ | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>*Continue To Track. | Brace For Recoil. | Brace For Recoil. |
| 21. Sense Tracer Impact. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐ | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC/Gunner Commands. | Listen For Driving Command. |
| 22. Adjust Fire. ☐ | Take Command Actions: ☐<br>. Repeat Step 16. | Respond To TC/Gunner Commands: ☐<br>. Repeat Step 16. | Respond To TC/Gunner Commands ☐<br>. Repeat Step 16 |
| 23. Command "TC COMPLETE." ☐ | *Place MAIN GUN Switch In OFF. ☐ | Reload/Restow Ammo. | Maintain Engine RPM . ☐ |
| 24. Place Gun Electrical Safety Switch In OFF. ☐ | Update Fire Control System. ☐<br>Monitor Commands. | Remove Spent Casings.<br>Check Replenisher Tape. ☐ | Monitor Gages. |
| 25. Move To Turret-Down OR Alternate Firing Position. ☐ | Monitor Driving Commands. | Resume Target Search. | Follow Driving Commands. ☐ |
| 26. Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## STATIONARY TANK/MULTIPLE TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Maintain Fire Control System.<br>Monitor Commands. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Maintain Engine RPMs.<br>Monitor Gages.<br>Monitor Commands |
| 2. | Issue Fire Command. ☐ | Insure Turret Power Is ON.<br>Insure Announced Ammo Is Indexed.<br>Place MAIN GUN Switch In ON. ☐ | Drop Down Into Turret.<br>*Close/Lock Hatch. | Listen For Driving Commands. |
| 3. | Lay Gun For Direction. ☐ | Look Through Telescope. | Insure Turret Is Unlocked/Clear.<br>*Place Turret Blower In ON. | *Release Brakes. |
| 4. | Command "DRIVER MOVE OUT, GUNNER TAKE OVER." ☐ | Issue Driving Command. ☐ | Insure Path Of Recoil Is Clear. | Shift To ... ☐<br>Drive Tank Forward. ☐ |
| 5. | Listen For "DRIVER STOP." | Insure Gun Is Clear Of Terrain. ☐<br>Announce "DRIVER STOP." ☐ | Place SAFETY In FIRE. ☐ | Listen For Driving Command.<br>Stop Tank. |
| 6. | Listen For "UP." | Look Through Periscope.<br>Detect/Recognize Target.<br>Listen For "UP." | Announce "UP." ☐ | Hold Brakes Depressed.<br>Shift To R. ☐ |
| 7. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Listen For "IDENTIFIED." | Remove Hands from T-Bar. ☐ |
| 8. | Release Override | Squeeze Palm Switches | Identify Announced Round. | Maintain Engine RPMs. |
| 9. | *Close/Lock Hatch. | Lay On Target Center Of Mass. ☐ | | |
| 10. | Look Through Rangefinder At Target. | Track Target. ☐ | Unlock Round From Rack. | Monitor Commands. |
| 11. | Range To Target. ☐ | *Apply Lead. ☐ | Remove Round. ☐ | |
| 12. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Gages. |
| 13. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | |
| 14. | Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>Continue Tracking. | Brace For Recoil. | Brace For Recoil. |
| 15. | *Announce Sensing. | Relay On Target Aiming Point.<br>Announce Sensing.<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 16. | *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Steps 21-24.<br>. Let Gunner Adjust Fire, Then Steps 21-24.<br>. Command "(Next Target)" Then Steps 17-24.<br>. Command "CEASE FIRE," Then Steps 26-27. | *Respond To TC Command: ☐<br>. Apply Corrections, Then Steps 21-24.<br>. Fire Adjust, Then Steps 21-24.<br>. Do Steps 17-24.<br>. Do Steps 25-28. | *Respond To TC Command: ☐<br>. Do Steps 17-24.<br>. Do Steps 17-24.<br>. Do Steps 17-24.<br>. Do Steps 25-28. | *Respond To TC Command: ☐<br>. Do Steps 17-24.<br>Do Steps 17-24.<br>. Do Steps 17-24.<br>Do Steps 25-28. |

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|---|---|---|---|---|
| 17. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Insure Path Of Recoil Is Clear. | | Monitor Commands. |
| | | Place SAFETY In FIRE. ☐ | | |
| 18. Listen For "UP." | Lay On Target Center Of Mass. ☐ | Announce "UP." ☐ | | |
| | Listen For "UP." | | | |
| 19. *Range To Target. | *Track Target. ☐ | Identify Announced Round. | | Maintain Engine RPM . ☐ |
| | *Apply Lead. ☐ | Unflock Round From Rack. | | |
| | | Remove Round. ☐ | | |
| 20. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | | Monitor Gages. |
| 21. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | | |
| | Make Final Lay. | | | |
| 22. Brace For Recoil. | Pause 1 Second. | Brace For Recoil. | | Brace For Recoil. |
| | Squeeze Firing Trigger(s). ☐ | | | |
| | *Continue To Track. | | | |
| 23. Announce Sensing. ☐ | Relay On Target Aiming Point. ☐ | Insure SAFETY In SAFE. | | Listen For Driving Command. |
| | Announce Sensing. ☐ | Load Round. ☐ | | |
| | Listen For TC Command. | Listen For TC Command. | | |
| 24. Issue Subsequent Fire Command: ☐ | Respond To TC Command: ☐ | Respond To TC Command: ☐ | | Respond To TC Command: ☐ |
| . Repeat Step 16. | . Repeat Step 16. | . Repeat Step 16. | | . Repeat Step 16. |
| 25. Command "CEASE FIRE." ☐ | Place MAIN GUN Switch In OFF. ☐ | Reload/Restow Ammo. | | Maintain Engine RPM . |
| 26. Return To Turret-Down OR Alternate Firing Position. ☐ | Update Fire Control System. ☐ | Remove Spent Casings. | | Follow Driving Commands. ☐ |
| | Monitor Commands. | Check Replenisher Tape. | | |
| 27. Acknowledge Crew Reports. | Report Firing Status. | Report Status. | | Report Driving Status. |

## MOVING TANK/STATIONARY TARGET ENGAGEMENT DRILL[1]

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. | Issue Fire Command. ☐ | Insure Announced Ammo Is Indexed.<br>Insure STAB Is ON. | Drop Down Into Turret.<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | *Direct Driver Toward Target. | Place MAIN GUN Switch In ON. ☐ | Insure Turret Is Unlocked/Clear.<br>*Place Turret Blower In ON. | Follow Driving Command. ☐ |
| 4. | Lay Gun For Direction. ☐ | Look Through Periscope.<br>Detect/Recognize Target. | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | *Detect/Recognize Target. |
| 5. | Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Search For Hull-Down Positions. |
| 6. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Commands. |
| 7. | Release Override. ☐ | Grasp Power Control Handles. ☐ | Identify Announced Round. | *Continue Search For Hull-Down Position. |
| 8. | *Close/Lock Hatch. | Lay On Target Center Of Mass. ☐ | Unlock Round From Rack. | Establish Steady Speed/Direction. ☐ |
| 9. | Look Through Rangefinder. | Listen For Driver Alerts. | Listen For Driver Alerts. | Alert Crew Of Obstacles. ☐ |
| 10. | Turn Computer OFF. ☐ | Track Target. ☐ | Remove Round. ☐ | Monitor Gages. |
| 11. | Range To Target. ☐ | Watch For Reticle Jump. | | |
| 12. | Turn Computer ON. ☐ | Relay On Target. ☐ | | Monitor Commands. |
| 13. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | |
| 14. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | Maintain Steady Speed/Direction. ☐ |
| 15. | Brace For Recoil | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 16. | *Announce Sensing. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | *Round Sense.<br>Listen For Driving Command. |
| 17. | *Issue Subsequent Fire Command. ☐<br>. Fire Adjust, Then Steps 18-22.<br>. Let Gunner Adjust Fire, Then Steps 18-22.<br>. Command "CEASE FIRE," Then Steps 24-25. | *Respond To TC Command: ☐<br>. Apply Corrections, Then Steps 18-22.<br>. Fire Adjust, Then Steps 18-22.<br>. Do Steps 23-25. | *Respond To TC Command: ☐<br>. Do Steps 18-22.<br>. Do Steps 18-22.<br>. Do Steps 23-25. | *Respond To TC Command: ☐<br>. Do Steps 18-22.<br>. Do Steps 18-22.<br>. Do Steps 23-25. |

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| 18. | Listen For "UP." | Listen For "UP."<br>Listen For Driver Alerts.<br>*Apply Lead. ☐ | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐<br>Announce "UP." ☐ | Continue Search For Hull-Down Positions.<br>Alert Crew Of Obstacles. ☐ |
| 19. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐<br>Listen For "ON THE WAY." | Maintain Steady Speed/Direction. ☐<br>Monitor Commands. |
| 20. | Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>*Continue To Track. | Brace For Recoil. | Brace For Recoil. |
| 21. | Announce Sensing. ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round.<br>Listen For TC Command. | *Round Sense.<br>Listen For Driving Command. |
| 22. | Issue Subsequent Fire Command: ☐<br>. Repeat Step 17. | Respond To TC Command: ☐<br>Repeat Step 17. | Respond To TC Command: ☐<br>. Repeat Step 17. | Respond To TC Command: ☐<br>Repeat Step 17. |
| 23. | Command "CEASE FIRE." ☐ | *Place MAIN GUN Switch In OFF ☐ | *Reload/Restow Ammo. | Drive Tactically. |
| 24. | Issue Driving Command. | Continue To Scan.<br>Listen For Driver Alerts. | Check Replenisher Tape. ☐<br>Remove Spent Casings.<br>Resume Target Search. | Follow Driving Command.<br>Adjust Speed/Direction. ☐<br>Alert Crew Of Obstacles. |
| 25. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

[1]Non-AOS Tanks Must Stop To Engage Targets Acquired On The Move.

## MOVING TANK/BATTLESIGHT TARGET ENGAGEMENT DRILL[1]

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. | Issue Fire Command. ☐ | Insure Announced Ammo Is Indexed.<br>Insure STAB Is ON. | Drop Down Into Turret.<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. | *Direct Driver Toward Target. | Place MAIN GUN Switch In ON. ☐ | Insure Turret Is Clear.<br>*Place Turret Blower In ON. | Follow Driving Command. ☐ |
| 4. | Lay Gun For Direction. ☐ | Detect/Recognize Target. | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | Detect/Recognize Target. |
| 5. | Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Search For Hull Down Positions. |
| 6. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Commands. |
| 7. | Release Override. ☐ | Grasp Power Control Handles. ☐<br>Listen For Driver Alerts. | Identify Battlesight Round.<br>Listen For Driver Alerts. | *Continue Search For Hull-Down Position.<br>Alert Crew Of Obstacles. ☐ |
| 8. | *Close/Lock Hatch. | Lay On Target Center Of Mass. ☐ | Unlock Round From Rack. | Establish Steady Speed/ Direction. ☐ |
| 9. | Look Through Rangefinder. | Track Target. ☐ | Remove Round. ☐ | Monitor Gages. |
| 10. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 11. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | Maintain Steady Speed/ Direction. ☐ |
| 12. | Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 13. | *Announce Sensing. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | *Round Sense.<br>Listen For Driving Command. |
| 14. | *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Steps 15-19.<br>. Let Gunner Adjust Fire, Then Steps 15-19.<br>. Command "CEASE FIRE." Then Steps 21-22. | *Respond To TC Command: ☐<br>. Apply Corrections, Then Steps 15-19.<br>. Fire Adjust, Then Steps 15-19.<br>. Do Steps 20-22. | *Respond To TC Command: ☐<br>. Do Steps 15-19.<br>. Do Steps 15-19.<br>. Do Steps 20-22. | *Respond To TC Command: ☐<br>. Do Steps 15-19.<br>. Do Steps 15-19.<br>. Do Steps 20-22. |

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| 15. | Listen For "UP." | Listen For "UP." | Insure Path Of Recoil Is Clear. | Continue Search For Hull-Down Positions. |
| | | Listen For Driver Alerts. | Place SAFETY In FIRE. ☐ | Alert Crew Of Obstacles. ☐ |
| | | *Apply Lead. ☐ | Announce "UP." ☐ | Monitor Commands. |
| 16. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Identify Battlesight Round. | Maintain Steady Speed/ Direction. ☐ |
| | | Make Final Lay. | Unlock Round From Rack. | |
| | | | Remove Round. | |
| | | | Listen For "ON THE WAY." | |
| 17. | Brace For Recoil. | Pause 1 Second. | Brace For Recoil. | Brace For Recoil. |
| | | Squeeze Firing Trigger(s). ☐ | | |
| | | *Continue To Track. | | |
| 18. | Announce Sensing. ☐ | Relay On Target Aiming Point. ☐ | Insure SAFETY In SAFE. | *Round Sense. |
| | | Announce Sensing. ☐ | Load Round. | Listen For Driving Command. |
| | | Listen For TC Command. | Listen For TC Command. | |
| 19. | Issue Subsequent Fire Command: | Respond To TC Command: ☐ | Respond To TC Command: ☐ | Respond To TC Command: ☐ |
| | . Repeat Step 14. | . Repeat Step 14. | . Repeat Step 14. | . Repeat Step 14. |
| 20. | Command "CEASE FIRE." ☐ | *Place MAIN GUN Switch In OFF. ☐ | Reload/Restow Ammo. | Drive Tactically. |
| 21. | Issue Driving Command. | Continue To Scan. | Check Replenisher Tape. ☐ | Follow Driving Command. |
| | | Listen For Driver Alerts. | Remove Spent Casings. | Adjust Speed/Direction. ☐ |
| | | | Resume Target Search. | Alert Crew Of Obstacles. |
| 22. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

[1]Non-AOS Tanks Must Stop To Engage Targets Acquired While On The Move.

# MOVING TANK/COAX TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Acquire/Identify Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. | Issue Fire Command. ☐ | Index HEP. ☐<br>Insure STAB Is ON.<br>Insure MAIN GUN Switch In OFF. | *Drop Down Into Turret.<br>*Close/Lock Hatch.<br>Insure Turret Is Clear. | Listen For Driving Command. |
| 3. | *Direct Driver Toward Target. | Place COAX Switch In ON. ☐ | *Place Turret Blower In ON.<br>Insure Coax Is Loaded/Charged. | Follow Driving Command. ☐ |
| 4. | Lay Gun For Direction. ☐ | Detect/Recognize Target. | Place Machinegun Safety In F. ☐ | Detect/Recognize Target. |
| 5. | Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Establish Steady Speed/ Direction. ☐ |
| 6. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Commands. |
| 7. | Release Override. ☐ | Grasp Power Control Handles. ☐ | Grasp Ammo Belt Near Receiver (M73 only) | *Search For Hull-Down Positions. |
| 8. | *Close/Lock Hatch. | Place Center Of Infinity Sight Over Target Area. ☐ | Maintain 3-4 Inches Slack From Ammo Box (M73 only). | Monitor Gages. |
| 9. | Estimate/Announce Range. ☐ | Track Target. ☐<br>Listen For Driver Alerts. | Listen For Driver Alerts. | Maintain Steady Speed/ Direction. ☐<br>Alert Crew Of Obstacles. ☐ |
| 10. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 11. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 12. | Observe Tracer Impact. | Fire 20-25 Round Burst. ☐<br>Continue To Track. | Observe Tracer Impact.<br>Monitor Ammunition Feed. | *Observe Tracer Impact. |
| 13. | *Announce Sensing. | *Announce Sensing.<br>Listen For TC Command. | *Round Sense.<br>Listen For TC Command. | *Round Sense.<br>Listen For TC Command. |
| 14. | *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Repeat Steps 12-14.<br>. Let Gunner Adjust Fire, Then Repeat Steps 12-14.<br>. Command "CEASE FIRE," Then Steps 16-17. | Respond To TC Command: ☐<br>. Apply Corrections, Then Repeat Steps 12-14.<br>. Adjust Fire, Then Repeat Steps 12-14.<br>. Do Steps 15-17. | Respond To TC Command: ☐<br>. Repeat Steps 12-14.<br>. Repeat Steps 12-14.<br>. Do Steps 15-17. | Respond To TC Command: ☐<br>. Repeat Steps 12-14.<br>. Repeat Steps 12-14.<br>. Do Steps 15-17. |
| 15. | Command "CEASE FIRE." ☐ | Place COAX Switch In OFF. ☐ | Place Machinegun Safety In S. ☐<br>*Place Turret Blower In OFF. | Drive Tactically. ☐ |
| 16. | Issue Driving Command. | Continue To Scan.<br>Listen For Driver Alerts. | Remove Spent Brass.<br>Reload Coax Ammo Box.<br>Resume Target Search. | Follow Driving Command.<br>Adjust Speed/Direction. ☐<br>Alert Crew Of Obstacles. |
| 17. | Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

## MOVING TANK/MOVING TARGET ENGAGEMENT DRILL[1]

PROCEDURES GUIDE

| TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|
| 1. Acquire/Identify Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. Issue Fire Command. ☐ | Insure Announced Ammo Is Indexed.<br>Insure STAB Is ON. | Drop Down Into Turret.<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. *Direct Driver Toward Target. | Place MAIN GUN Switch In ON. ☐ | Insure Turret Is Clear.<br>Place Turret Blower In ON. ☐ | Follow Driving Command. ☐ |
| 4. Lay Gun For Direction. ☐ | Detect/Recognize Target. | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | *Detect/Recognize Target. |
| 5. Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Search For Hull-Down Positions. |
| 6. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Commands. |
| 7. Release Override. ☐ | Grasp Power Control Handles. ☐<br>Lay On Target. | Identify Announced Round. | *Continue Search For Hull-Down Positions. |
| 8. Command "DRIVER STOP." ☐ | Listen For "DRIVER STOP." | *Brace For Stop. | Stop Tank. ☐<br>Shift To N. ☐ |
| 9. *Close/Lock Hatch. | Lay On Target Center Of Mass. ☐ | Unlock Round From Rack. | Hold Brakes Depressed. ☐ |
| 10. Look Through Rangefinder | Track Target. ☐ | Remove Round. ☐ | Remove Hands From T-Bar. ☐ |
| 11. Range To Target. ☐ | *Apply Lead. ☐ | | Maintain Engine RPM . |
| 12. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 13. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | Monitor Gages. |
| 14. Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>Continue Tracking. | Brace For Recoil. | Brace For Recoil. |
| 15. *Announce Sensing. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 16. *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Steps 25-28.<br>. Let Gunner Adjust Fire, Then Steps 25-28.<br>. Command "CEASE FIRE," Then Steps 17-28.<br>. Command "TARGET, CEASE FIRE," Then Steps 30-31. | *Respond To TC Command: ☐<br>. Apply Corrections, Then Steps 21, 25-28.<br>. Fire Adjust, Then Steps 21, 25-28.<br>. Do Steps 17-28.<br>. Do Steps 29-31. | *Respond To TC Command: ☐<br>. Do Steps 19-21, 23, 25-28.<br>. Do Steps 19-21, 23, 25-28.<br>. Do Steps 17-28.<br>. Do Steps 29-31. | *Respond To TC Command: ☐<br>. Do Steps 19-21, 23-28.<br>. Do Steps 19-21, 23-28.<br>. Do Steps 17-28.<br>. Do Steps 29-31. |

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| 17. Command "DRIVER MOVE OUT." ☐ | Continue Tracking. ☐<br>Listen For "DRIVER MOVE OUT." | Prepare To Move Out. | Release Brakes. ☐<br>Shift To L. ☐ |
| 18. Issue Fire Command. ☐ | Listen For Fire Command. | Listen For Fire Command. | Establish Steady Speed/ Direction. ☐ |
| 19. *Lay Gun For Direction. | *Detect/Recognize Target.<br>Listen For Driver Alerts. | Insure Path Of Recoil Is Clear.<br>Listen For Driver Alerts. | Alert Crew Of Obstacles. ☐ |
| 20. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Place SAFETY In FIRE. ☐<br>*Listen For "IDENTIFIED." | Monitor Commands.<br>Monitor Gages. |
| 21. Listen For "UP." | Listen For "UP." | Announce "UP." ☐<br>*Brace For Stop. | Listen For Driving Command. |
| 22. Command "DRIVER STOP." ☐ | Listen For "DRIVER STOP." | | Stop Tank. ☐ |
| 23. *Range To Target. | Lay On Target Center Of Mass. ☐<br>*Apply Lead. ☐ | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐ | Shift To N. ☐<br>Hold Brakes Depressed. ☐<br>Remove Hands From T-Bar. ☐ |
| 24. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Maintain Engine RPM . |
| 25. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | Monitor Commands.<br>Monitor Gages. |
| 26. Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>*Continue Tracking. | Brace For Recoil. | Brace For Recoil. |
| 27. Announce Sensing. ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 28. Issue Subsequent Fire Command: ☐<br>. Repeat Step 16. | Respond To TC Command: ☐<br>. Repeat Step 16. | Respond To TC Command: ☐<br>. Repeat Step 16. | Respond To TC Command: ☐<br>. Repeat Step 16. |
| 29. Command "CEASE FIRE." ☐ | *Place MAIN GUN Switch In OFF. ☐ | Reload/Restow Ammo. | *Continue Search For Hull-Down Positions. |
| 30. Issue Driving Command. | Continue To Scan.<br>Listen For Driver Alerts. | Check Replenisher Tape. ☐<br>Remove Spent Casings.<br>Resume Target Search. | Follow Driving Commands.<br>Adjust Speed/Direction. ☐<br>Alert Crew Of Obstacles. |
| 31. Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

[1]Non-AOS Tanks Must Stop To Engage Targets Acquired On The Move.

## MOVING TANK/SIMULTANEOUS TARGET ENGAGEMENT DRILL[1]

PROCEDURES GUIDE

| TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|
| 1. Acquire/Identify Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. Issue Fire Command. ☐ | Insure Announced Ammo Is Indexed.<br>Insure STAB Is ON. | Drop Down Into Turret.<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. *Direct Driver Toward Target. | Place MAIN GUN Switch In ON. ☐ | Insure Turret Is Clear.<br>Place Turret Blower In ON. | Follow Driving Command. ☐ |
| 4. Lay Gun For Direction. ☐ | Detect/Recognize Target. | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | *Detect/Recognize Target. |
| 5. Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Search For Hull-Down Positions. |
| 6. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Commands. |
| 7. Release Override. ☐ | Grasp Power Control Handles. ☐ | Identify Announced Round. | *Continue Search For Hull-Down Position. |
| 8. *Close/Lock Hatch. | Lay On Target Center Of Mass. ☐ | Unlock Round From Rack. | Establish Steady Speed/Direction. ☐ |
| 9. Look Through Rangefinder At Target. | Listen For Driver Alerts. | Listen For Driver Alerts. | Alert Crew Of Obstacles. ☐ |
| 10. Turn Computer OFF. ☐ | Track Target. ☐ | Remove Round. ☐ | Monitor Gages. |
| 11. Range To Target. ☐ | Watch For Reticle Jump. | | |
| 12. Turn Computer ON. ☐ | Relay On Target. ☐ | | Monitor Commands. |
| 13. Command "FIRE AND ADJUST, CALIBER FIFTY." ☐ | Listen For "FIRE." | Listen For "FIRE." | |
| 14. *Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | Maintain Steady Speed/Direction. ☐ |
| 15. *Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>Continue To Track. ☐ | Brace For Recoil. | Brace For Recoil. |
| 16. Insure Cal .50 Gun Safety In F. | Relay On Target Aiming Point ☐<br>Announce Sensing. ☐<br>Listen For "TC COMPLETE." | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC/Gunner Command. | *Round Sense.<br>Listen For Driving Command. |
| 17. Place Gun Electrical Safety Switch In ON. ☐ | Take Command Actions: ☐<br>. Fire Adjust, Then Steps 19-23.<br>. Announce "DRIVER STOP," Fire Adjust, Then Steps 19-23<br>. Announce "CEASE FIRE," Then Step 18. | Respond To TC/Gunner Commands: ☐<br>. Do Steps 19-23.<br>. Prepare To Stop, Then Steps 19-23.<br>. Do Step 18. | Respond To TC/Gunner Commands ☐<br>. Do Steps 19-23.<br>. Stop Tank, Then Steps 19-23<br>. Do Step 18. |

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|---|---|---|---|---|
| 18. *Hold Electrical Power Control Switch To On. ☐ | Place MAIN GUN Switch In OFF. ☐<br>Assist TC In Fire Adjustment. ☐<br>Listen For "TC COMPLETE." Then Steps 24-27. | Assist TC/Cal .50 Operation. ☐<br>Listen For "TC COMPLETE." Then Steps 24-27. | *Continue Search For Hull Down Positions.<br>Maintain Steady Speed/ Direction. ☐ |
| 19. Estimate Range. | Listen For "UP."<br>Listen For Driver Alerts.<br>*Apply Lead. ☐ | Insure Path Of Recoil Is Clear.<br>Place SAFETY In SAFE.<br>Announce "UP." ☐ | Alert Crew Of Obstacles. ☐ |
| 20. Lay Cal .50 On Target ☐ | Announce "ON THE WAY." ☐<br>Make Final Lay. | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐<br>Listen For "ON THE WAY." | Monitor Commands.<br>Monitor Gages.<br>Maintain Steady Speed/ Direction. ☐ |
| 21. Fire 10-15 Round Burst. ☐ | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>*Continue To Track. | Brace For Recoil. | Brace For Recoil. |
| 22. Sense Tracer Impact. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For "TC COMPLETE." | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC/Gunner Commands. | Round Sense.<br>Listen For Driving Command. |
| 23. Adjust Fire. ☐ | Take Command Action: ☐<br>. Repeat Step 17. | Respond To TC/Gunner Commands: ☐<br>. Repeat Step 17. | Respond To TC/Gunner Commands ☐<br>. Repeat Step 17. |
| 24. Command "TC COMPLETE." ☐ | Place MAIN GUN Switch In OFF. ☐ | *Place Turret Blower In OFF.<br>Reload/Restow Ammo. | Drive Tactically. |
| 25. Place Gun Electrical Safety Switch In OFF. ☐ | View Through Unity Window. | Check Replenisher Tape. ☐<br>Remove Spent Casings. | Maintain Steady Speed/ Direction. |
| 26. Issue Driving Command. | Continue To Scan.<br>Listen For Driver Alerts. | Listen For Driver Alerts.<br>Resume Target Search. | Follow Driving Command.<br>Adjust Speed/Direction. ☐<br>Alert Crew Of Obstacles. |
| 27. Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

[1]Non-ADS Tanks Must Stop To Engage Targets Acquired While On The Move.

## MOVING TANK/MULTIPLE TARGET ENGAGEMENT DRILL[1]

PROCEDURES GUIDE

| TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|
| 1. Acquire/Identify Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Targets.<br>*Acquire/Identify Target.<br>*Report Target. | Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. |
| 2. Issue Fire Command. ☐ | Insure Announced Ammo Is Indexed.<br>Insure STAB Is ON. | Drop Down Into Turret.<br>*Close/Lock Hatch. | Listen For Driving Command. |
| 3. *Direct Driver Toward Target. | Place MAIN GUN Switch In ON. ☐ | Insure Turret Is Clear.<br>Place Turret Blower In ON. ☐ | Follow Driving Command. ☐ |
| 4. Lay Gun For Direction. ☐ | Detect/Recognize Target. | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | *Detect/Recognize Target. |
| 5. Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Search For Hull-Down Positions. |
| 6. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | *Listen For "IDENTIFIED." | Listen For Driving Commands. |
| 7. Release Override. ☐ | Grasp Power Control Handles. ☐<br>Lay On Target. | Identify Announced Round. | *Continue Search For Hull-Down Positions. |
| 8. Command "DRIVER STOP." ☐ | Listen For "DRIVER STOP." | *Brace For Stop. | Stop Tank. ☐<br>Shift To N. ☐ |
| 9. *Close/Lock Hatch. | Lay On Target Center Of Mass. ☐ | Unlock Round From Rack. | Hold Brakes Depressed. ☐ |
| 10. Look Through Rangefinder At Target. | Track Target. ☐ | Remove Round. ☐ | Remove Hands From T-Bar. ☐ |
| 11. Range To Target. ☐ | *Apply Lead. ☐ | | Maintain Engine RPM . ☐ |
| 12. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Monitor Commands. |
| 13. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | Monitor Gages. |
| 14. Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>Continue Tracking. ☐ | Brace For Recoil. | Brace For Recoil. |
| 15. *Announce Sensing. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 16. *Issue Subsequent Fire Command: ☐ | *Respond To TC Command: ☐ | *Respond To TC Command: ☐ | *Respond To TC Command: ☐ |
| . Fire Adjust, Then Steps 25-28. | . Apply Corrections, Then Steps 25-28. | . Do Steps 19-21, 23-28. | . Do Steps 19-21, 23-28. |
| . Let Gunner Adjust Fire, Then Steps 25-28. | . Fire Adjust, Then Steps 25-28. | . Do Steps 19-21, 23-28. | . Do Steps 19-21, 23-28. |
| . Command " (Next Target)," Then Steps 17-28. | . Do Steps 17-28. | . Do Steps 17-28. | . Do Steps 17-28. |
| . Command "CEASE FIRE," Then Steps 30-31. | . Do Steps 29-31. | . Do Steps 29-31. | . Do Steps 29-31. |

| | | | | |
|---|---|---|---|---|
| 17. Command "DRIVER MOVE OUT." ☐ | Track Target. ☐ | *Brace For Moving Out. | Shift To L. ☐<br>Drive Tank Forward. ☐ |
| 18. Issue Fire Command. ☐ | Listen For Fire Command. | Listen For Fire Command. | Establish Steady Speed/ Direction. ☐ |
| 19. *Lay Gun For Direction. | *Detect/Recognize Target.<br>Listen For Driver Alerts. | Insure Path Of Recoil Is Clear.<br>Listen For Driver Alerts. | Alert Crew Of Obstacles. ☐ |
| 20. Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐ | Place SAFETY In FIRE. ☐<br>*Listen For "IDENTIFIED." | Monitor Commands.<br>Monitor Gages. |
| 21. Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Listen For Driving Command. |
| 22. Command "DRIVER STOP." ☐ | Listen For "DRIVER STOP." | *Brace For Stop. | Stop Tank. ☐ |
| 23. *Range To Target. | Lay On Target Center Of Mass. ☐<br>*Apply Lead. ☐ | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐ | Shift To N.<br>Hold Brakes Depressed. ☐<br>Remove Hands From T-Bar. ☐ |
| 24. Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | Maintain Engine RPM . |
| 25. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | Monitor Commands.<br>Monitor Gages. |
| 26. Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger(s). ☐<br>*Continue Tracking. ☐ | Brace For Recoil. | Brace For Recoil. |
| 27. Announce Sensing. ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 28. Issue Subsequent Fire Command: ☐<br>. Repeat Step 16. | Respond To TC Command: ☐<br>. Repeat Step 16. | Respond To TC Command: ☐<br>. Repeat Step 16. | Respond To TC Command: ☐<br>. Repeat Step 16. |
| 29. Command "CEASE FIRE." ☐ | *Place MAIN GUN Switch In OFF. ☐ | *Place Turret Blower In OFF.<br>Reload/Restow Ammo. | *Continue Search For Hull-Down Positions. |
| 30. Issue Driving Command. | Continue To Scan.<br>Listen For Driver Alerts. | Check Replenisher Tape. ☐<br>Remove Spent Casings.<br>Resume Target Search. | Follow Driving Commands.<br>Adjust Speed/Direction. ☐<br>Alert Crew Of Obstacles. |
| 31. Acknowledge Crew Reports. | Report Firing Status. | Report Loading Status. | Report Driving Status. |

[1]Non-AOS Tanks Must Stop To Engage Targets Acquired While On The Move.

## RANGE CARD ENGAGEMENT DRILL

### PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Receive Platoon Leader Fire Command. | *Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Listen For Fire Command. | Listen For Fire Command. |
| 2. | Command "GUNNER, HEP, AREA FIRE." ☐ | Insure Turret Power Is ON.<br>Place MAIN GUN Switch In ON. ☐ | Insure Turret Is Unlocked/Clear.<br>*Place Turret Blower In ON. | Start Engine. ☐<br>Insure Brakes Are Locked. |
| 3. | *Obtain/Review Range Card. | Insure HEP Is Indexed. | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐ | Remove Hands From T-Bar. ☐<br>Maintain Engine RPM . |
| 4. | Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Monitor Gages. |
| 5. | Announce "DEFLECTION _____." ☐ | Grasp Manual Traverse Handle.<br>Traverse To Announced Deflection. ☐<br>Release Handle. | Identify HEP Round. | Monitor Commands. |
| 6. | Verify Deflection Read Back. | Repeat "DEFLECTION _____." ☐ | Unlock HEP From Rack. | |
| 7. | Index Range Into Rangefinder And Announce. ☐ | Grasp Manual Elevation Control. | Remove HEP. ☐ | Maintain Engine RPM . ☐ |
| 8. | Announce "QUADRANT _____." ☐ | Index Announced Elevation On Quadrant. ☐<br>Center Bubble On Elevation Quadrant. ☐ | | |
| 9. | Verify Quadrant Read Back. | Repeat "QUADRANT _____." | | Monitor Gages. |
| 10. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | |
| 11. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Listen For "ON THE WAY." | |
| 12. | Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger ☐ | Brace For Recoil. | Brace For Recoil. |
| 13. | Monitor Fire Adjustment. | Check Deflection.<br>Add 1 MIL. ☐<br>Center Bubble. ☐ | Insure SAFETY In SAFE.<br>Load HEP. ☐<br>Insure Path Of Recoil Is Clear. | Monitor Commands. |
| 14. | Listen For "UP." | Listen For "UP." | Place SAFETY In FIRE. ☐<br>Announce "UP." ☐ | Maintain Engine RPM . ☐ |
| 15. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐ | Identify HEP.<br>Unlock HEP From Rack.<br>Remove HEP. ☐<br>Listen For "ON THE WAY." | Monitor Gages. |
| 16. | Brace For Recoil. | Pause 1 Second.<br>Squeeze Firing Trigger ☐ | Brace For Recoil. | Brace For Recoil. |

| | | | | |
|---|---|---|---|---|
| 17. Monitor Fire Adjustment. | Check Deflection. | | Insure SAFETY In SAFE. | Monitor Commands. |
| | Drop 2 PILS. ☐ | | Load MEP. ☐ | |
| | Center Bubble. ☐ | | Insure Path Of Recoil Is Clear. | |
| 18. Repeat Steps 14-16. | Repeat Steps 14-16. ☐ | | Repeat Steps 14-16. ☐ | Repeat Steps 14-16. ☐ |
| 19. Monitor Fire Adjustment. | Add 1 MIL. ☐ | | Insure SAFETY In SAFE. | Monitor Commands. |
| | Traverse RIGHT 50 MILS. ☐ | | Load MEP. ☐ | |
| | Center Bubble. ☐ | | Insure Path Of Recoil Is Clear. | |
| 20. Repeat Steps 14-16. | Repeat Steps 14-16. ☐ | | Repeat Steps 14-16. ☐ | Repeat Steps 14-16. ☐ |
| 21. Monitor Fire Adjustment. | Traverse LEFT 100 MILS. ☐ | | Insure SAFETY In SAFE. | Monitor Commands. |
| | Center Bubble. ☐ | | Load MEP. ☐ | |
| | | | Insure Path Of Recoil Is Clear. | |
| 22. Repeat Steps 14-16. | Repeat Steps 14-16. ☐ | | Repeat Steps 14-16. ☐ | Repeat Steps 14-16. ☐ |
| 23. Command "CEASE FIRE." ☐ | Place MAIN GUN Switch In OFF. ☐ | | Insure SAFETY In SAFE. | *Release Brakes. |
| | | | Reload/Restow MEP. | |
| | | | *Place Turret Blower In OFF. | |
| 24. Return Gun To Primary Target. ☐ | Follow TC Commands. ☐ | | Check Replenisher Tape. ☐ | Listen For Driving Command. |
| | Resume Target Search. | | Remove Spent Castings. | |
| 25. Acknowledge Crew Reports. | Report Firing Status. | | Report Loading Status. | Report Firing Status. |

## RANGE CARD LAY TC DIRECT FIRE TARGET ENGAGEMENT DRILL

PROCEDURES GUIDE

| | TANK COMMANDER | GUNNER | LOADER | DRIVER |
|---|---|---|---|---|
| 1. | Receive Platcon Leader Fire Command. | *Search For Target.<br>*Acquire/Identify Target.<br>*Report Target. | Listen For Fire Command. | Lister For Fire Command. |
| 2. | Command "GUNNER DIRECT FIRE INDEX HEP, FIRE _____ (Ammo)." ☐ | Insure Turret Power Is ON.<br>Place MAIN GUN Switch In On. ☐ | Insure Turret Is Unlocked/Clear.<br>Insure SAFETY In SAFE. | Start Engine. ☐ |
| 3. | *Obtain/Review Range Card. | Insure HEP Is Indexed. | Open Breech Manually. ☐ | Insure Brakes Are Depressed. |
| 4. | Announce "_____ (Target)." ☐ | Make Mental Note Of Target. | Remove HEP Round. ☐ | Remove Hands From T-Bar. ☐ |
| 5. | Announce "DEFLECTION _____" ☐ | Grasp Manual Traverse Handle.<br>Traverse To Announced Deflection. ☐<br>Release Handle. | Stow HEP In Rack. ☐ | Maintain Engine RPM . ☐ |
| 6. | Verify Deflection Read Back. | Repeat "DEFLECTION _____." ☐ | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐ | Monitor Commands. |
| 7. | Index Range Into Rangefinder And Announce. ☐ | Grasp Manual Elevation Control. | Load Round. ☐ | |
| 8. | Announce "QUADRANT _____." ☐ | Index Announced Elevation On Quadrant. ☐<br>Center Bubble. ☐<br>Release Control. | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. | Monitor Gages. |
| 9. | Verify Quadrant Read Back. | Repeat "QUADRANT _____." ☐ | Insure Path Of Recoil Is Clear. | |
| 10. | Listen For "_____ (Ammo) INDEXED." | Announce "_____ (Ammo) INDEXED." ☐ | Listen For "IDENTIFIED." | |
| 11. | *Look Through Rangefinder. | Look Through Periscope. | Place Turret Blower In ON. | Monitor Commands. |
| 12. | Acquire/Identify Target When Illuminated. ☐ | Detect/Recognize Target When Illuminated. | | |
| 13. | Listen For "IDENTIFIED." | Announce "IDENTIFIED." ☐<br>Squeeze Palm Switches. | Place SAFETY In FIRE. ☐ | Maintain Engine RPM . |
| 14. | Listen For "UP." | Listen For "UP." | Announce "UP." ☐ | Monitor Gages. |
| 15. | *Range To Target. ☐ | Lay On Target Center Of Mass. ☐<br>Track Target. ☐<br>Apply Lead. ☐ | | |
| 16. | Command "FIRE." ☐ | Listen For "FIRE." | Listen For "FIRE." | |
| 17. | Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Listen For "ON THE WAY." | |
| 18. | Brace For Recoil. | Pause 1 Second. | Brace For Recoil. | Brace For Recoil. |
| 19. | Close Eyes Momentarily. ☐ | Close Eyes Momentarily. ☐<br>Squeeze Firing Trigger(s). ☐<br>Continue Tc Track. ☐ | *Close Eyes Momentarily. ☐ | Close Eyes Momentarily. |

| | | | | |
|---|---|---|---|---|
| 20. *Announce Sensing. | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 21. *Issue Subsequent Fire Command: ☐<br>. Fire Adjust, Then Steps 22-26.<br>. Let Gunner Adjust Fire, Then Steps 22-26.<br>. Command "CEASE FIRE," Then Steps 28-29. | *Respond To TC Command: ☐<br>. Apply Corrections, Then Steps 22-26.<br>. Fire Adjust, Then Steps 22-26.<br>. Do Steps 27-29. | *Respond To TC Command: ☐<br>. Do Steps 22-26.<br>. Do Steps 22-26.<br>. Do Steps 27-29. | *Respond To TC Command: ☐<br>. Do Steps 22-26.<br>. Do Steps 22-26.<br>. Do Steps 27-29. |
| 22. Listen For "UP." | Listen For "UP." ☐<br>*Track Target. ☐<br>*Apply Lead. ☐ | Insure Path Of Recoil Is Clear.<br>Place SAFETY In FIRE. ☐<br>Announce "UP." ☐ | Monitor Commands.<br>Monitor Gages. |
| 23. Listen For "ON THE WAY." | Announce "ON THE WAY." ☐<br>Make Final Lay. | Identify Announced Round.<br>Unlock Round From Rack.<br>Remove Round. ☐<br>Listen For "ON THE WAY." | Maintain Engine RPM. ☐ |
| 24. Brace For Recoil. | Pause 1 Second. | Brace For Recoil. | Brace For Recoil. |
| 25. Close Eyes Momentarily ☐ | Close Eyes Momentarily ☐<br>Squeeze Firing Trigger(s). ☐<br>*Continue To Track. | *Close Eyes Momentarily. | Close Eyes Momentarily. ☐ |
| 26. Announce Sensing. ☐ | Relay On Target Aiming Point. ☐<br>Announce Sensing. ☐<br>Listen For TC Command. | Insure SAFETY In SAFE.<br>Load Round. ☐<br>Listen For TC Command. | Listen For Driving Command. |
| 27. Issue Subsequent Fire Command:<br>. Command "CEASE FIRE." ☐ | Respond To TC Command:<br>. Place MAIN GUN Switch In OFF. ☐ | Respond To TC Command:<br>.*Place Turret Blower In OFF.<br>. Reload/Restow Ammo. | Respond To TC Command:<br>. Prepare To Drive Rearward. ☐ |
| 28. Move To Turret-Down Or Alternate Firing Position. ☐<br>29. Acknowledge Crew Reports. | Update Fire Control System. ☐<br>Resume Target Search.<br>Report Firing Status. | Check Replenisher Tape. ☐<br>Remove Spent Casings.<br>Report Loading Status. | Follow Driving Commands. ☐<br>Report Driving Status. |

# Table C-1

## CREW DRILL TARGET SERVICING REQUIREMENTS FOR M60A1AOS TANK CREWS

| CREW DRILLS | OPEN HATCH | | CLOSED HATCH | | OPEN HATCH WITH MASK | | CLOSED HATCH WITH MASK | | WEAPON SYSTEM FAILURE | | | | 3 MAN CREW |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DAY | NIGHT | DAY | NIGHT | DAY | NIGHT | DAY | NIGHT | PERISCOPE/ COMPUTER | RANGE FINDER | TURRET POWER | STAB SYSTEM | |
| 1. Single - Main Gun Stationary vs. Stationary GNR Periscope - Precision | | | | | | | | | | | | | |
| 2. Single - Main Gun Stationary vs. Moving GNR Periscope - Precision | | | | | | | | | | | | | |
| 3. Single - Main Gun Stationary vs. Moving Telescope - Precision | | | | | | | | | | | | | |
| 4. Simultaneous - Main Gun/ .50 Cal Stationary vs. Mov/Stationary Periscopes - Pre/Suppressive | | | | | | | | | | | | | |
| 5. Multiple - Main Gun Stationary vs. Moving GNR Periscope - Precision | | | | | | | | | | | | | |
| 6. Single - Main Gun Moving vs. Stationary GNR Periscope - Precision | | | | | | | | | | | | | |
| 7. Single - Main Gun Moving vs. Stationary GNR Periscope - Battlesight | | | | | | | | | | | | | |
| 8. Single - Coax Machinegun Moving vs. Stationary Infinity - Suppressive | | | | | | | | | | | | | |
| 9. Single - Main Gun Moving vs. Moving GNR Periscope - Precision | | | | | | | | | | | | | |
| 10. Simultaneous - Main Gun/.50 Cal Moving vs. Mov/Stationary Periscopes - Pre/Suppressive | | | | | | | | | | | | | |
| 11. Multiple - Main Gun Moving vs. Stationary GNR Periscope - Precision | | | | | | | | | | | | | |
| 12. Single - Main Gun Stationary vs. Stationary Auxiliary - Range Card | | | | | | | | | | | | | |
| 13. Single - Main Gun Stationary vs. Moving Range Card Lay to Direct Fire | | | | | | | | | | | | | |

## Table C-2

### M60A1(AOS) EQUIPMENT CONDITIONS BY CREW STATION AND DRILL

| | CREW DRILL | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TC STATION** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Cal .50 Electrical Safety Switch In OFF | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Cupola Power Switch In OFF | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Range Card Prepared IAW FM 17-12-2 | | | | | | | | | | | | X | X |
| Cal .50 Safety In F | | | | | | | | | | X | | | |
| **GUNNER STATION** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| ELEV/TRAV POWER Switch In ON | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Periscope Ballistic Shield Is OPEN | X | X | X | X | X | X | X | X | X | X | X | X | X |
| MAIN GUN Switch In OFF | X | X | X | X | X | X | X | X | X | X | X | X | X |
| MACHINE GUN Switch In OFF | X | X | X | X | X | X | X | X | X | X | X | X | X |
| POWER Switch In ON | X | X | X | X | X | X | X | X | X | X | X | X | X |
| AMMO SELECT Handle In APDS | X | X | X | X | X | X | X | X | X | X | X | | |
| COMPUTER Switch In ON | X | X | | X | X | X | X | X | X | X | X | X | X |
| STAB Switch IN ON | | | | | | X | X | X | X | X | X | | |
| AMMO SELECT Handle In HEP | | | | | | | | | | | | X | X |
| 1200 Indexed In Computer | | | | | | | X | | | | | | |
| APDS/HEP Reticle In Telescope | | | X | | | | | | | | | | |
| **LOADER STATION** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Turret Lock In UNLOCKED | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Main Gun Safety In SAFE | X | X | X | X | X | X | X | X | X | X | X | X | X |
| TURRET BLOWER Switch In OFF | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Breech Locked Open | X | X | X | X | X | X | X | | X | X | X | X | X |
| Breech Locked Closed | | | | | | | | X | | | | | |
| Coax Loaded/Charged | | | | | | | | X | | | | | |
| Coax Safety In F | | | | | | | | X | | | | | |
| **DRIVER STATION** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| MASTER BATTERY Switch In ON | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Trans Shift Control In P | X | X | X | X | X | | | | | | | X | X |
| Trans Shift Control In H | | | | | | X | X | X | X | X | X | | |
| Engine Idling at 700-750 rpm | X | X | X | X | X | | | | | | | | |
| Tank Moving at 10-20 mph | | | | | | X | X | X | X | X | X | | |